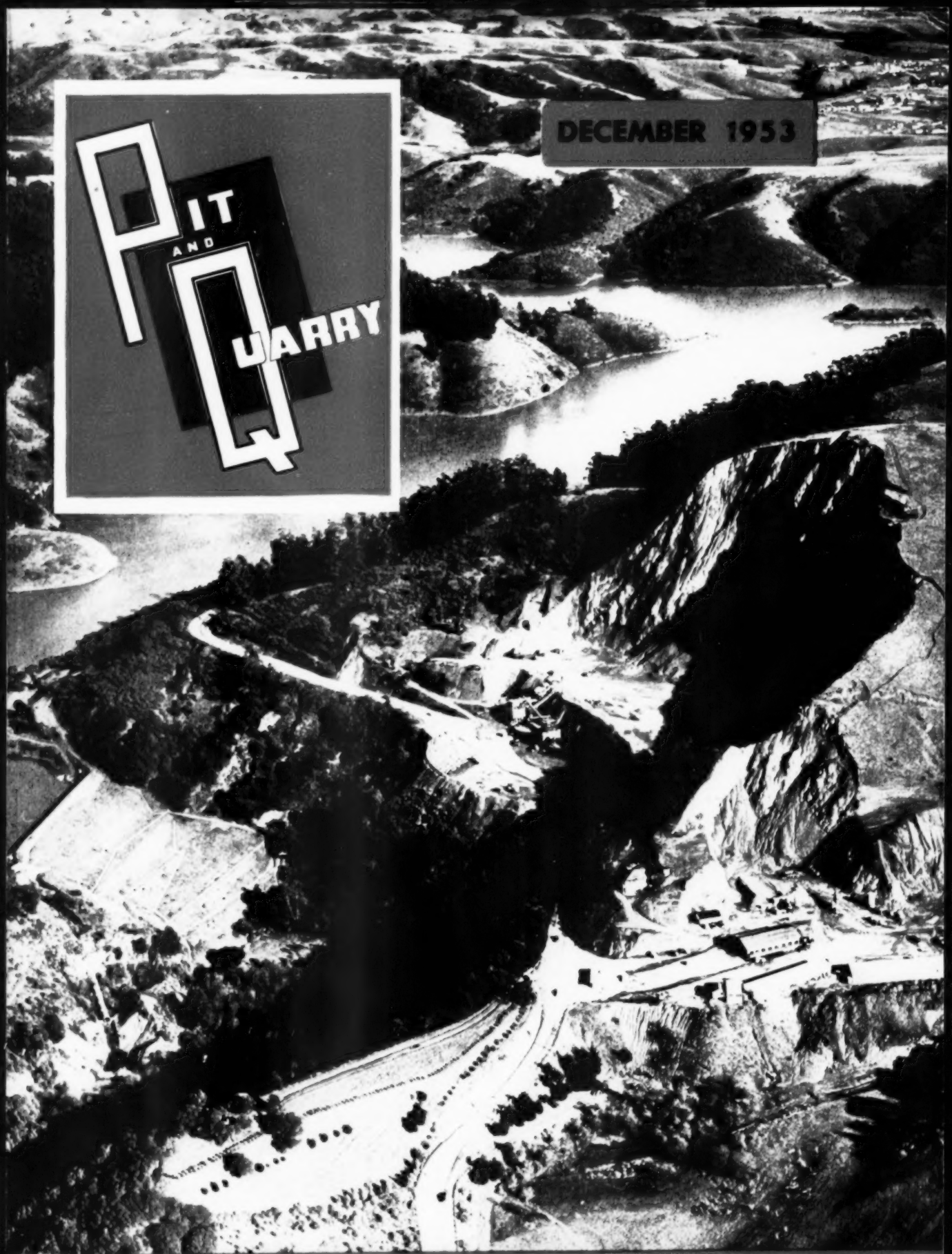

Operations of the San Leandro Rock Company near San Leandro, Calif.

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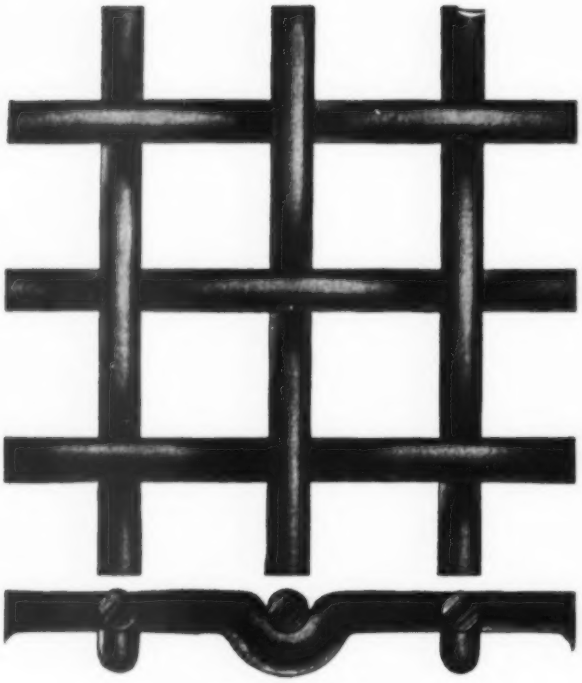
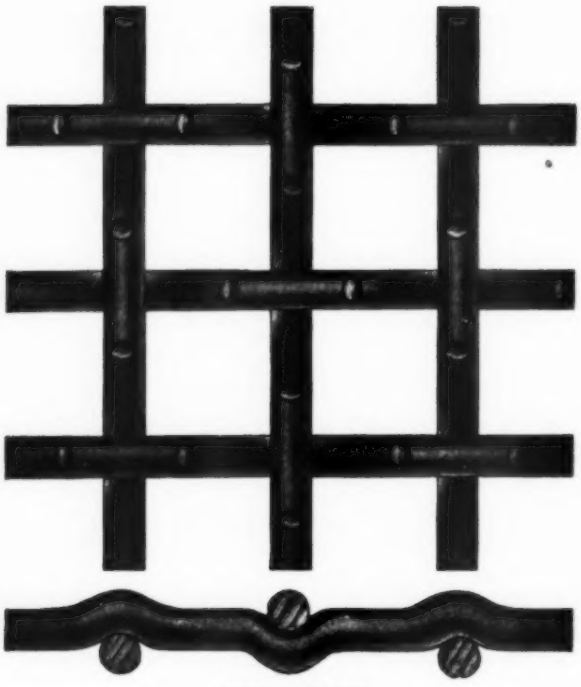


STA-SMOOTH

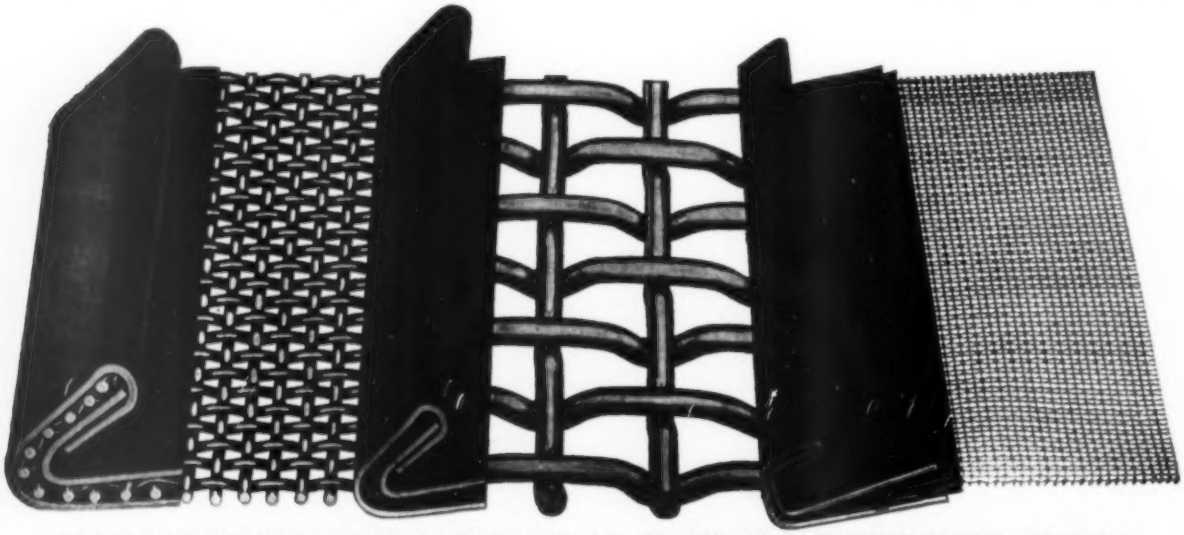


ARCH-CRIMP

SUPER-LOY VIBRATING-SCREEN SECTIONS

SUPER - HARD - - - SUPER - TOUGH - - - SUPER - STRONG

SUPER - LOY SCREENS are made from a high carbon steel specially alloyed to withstand abrasion longer — endure vibration better — resist fatigue to the utmost



ORDER LUDLOW-SAYLOR HOOK-STRIPS FOR ALL TENSIONED VIBRATING-SCREEN SECTIONS.

LUDLOW-SAYLOR WIRE CLOTH CO.

634 S. Newstead Ave. ST. LOUIS 10, MO.

TOTAL ENGINEERING

Complete Link-Belt "circular stairway" belt conveyor system elevates 500 TPH of minus 3½-in. stone to sizing house, located 250-ft. above quarry floor.

It's your assurance of top efficiency with LINK-BELT belt conveyors

HERE'S how "total engineering" works for you when you use Link-Belt Belt Conveyors. First, Link-Belt conveyor engineers analyze your needs—then recommend the *right* components. In addition, Link-Belt can supply all related equipment — other types of conveyors, feeders, elevators, car dumpers and shakers. And Link-Belt will build your supporting structures and enclosures . . . install the job completely, if desired. Call the Link-Belt office near you for any engineering assistance you need.

LINK-BELT

BELT CONVEYOR EQUIPMENT 13,280-A

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales offices in Principal Cities.

LINK-BELT builds a complete line of belt conveyor components

ALL TYPES OF ROLLER BEARING IDLERS

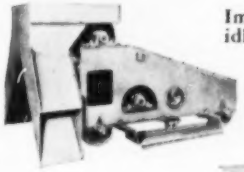
Return idler

20° troughed idler

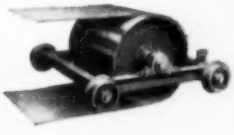
Belt-training idler

45° troughed idler

Impact-cushioning idler



BELT AND MOTOR PROPELLED TRIPPERS



COMPLETE TERMINAL MACHINERY

PIT AND QUARRY, December, 1953, Vol. 46, No. 6. Published monthly by the Pit and Quarry Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, under the Act of March 3, 1879.

This Department Is Never Busy

. . . but SECO VIBRATING SCREENS ARE!

Long Life PERFORMANCE Means PROFITABLE SCREENING for SECO Users

If you have Seco vibrating screens on your job . . . it's good to know that you can get **quick service** on any parts replacements you may ever require. That's part of Seco's service policy . . . another of the reasons why you put your confidence in the Seco organization.

. . . BUT HERE'S SOMETHING MORE IMPORTANT!

Seco vibrating screens are **built to endure.** The smooth, balanced performance of patented Seco vibrating screens pays off in long life . . . and a holiday from excessive maintenance worries. **It's a proven fact!** Thousands of busy Seco vibrating screens can't keep our parts department busy.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

WHAT'S AHEAD?

Check your screening requirements now

PLAY SAFE! REPLACE OR ENLARGE WITH

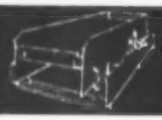
PERFORMANCE PROVEN

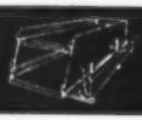
SECO VIBRATING SCREENS

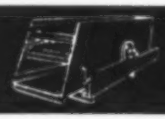
Made Only By

Screen Equipment Company, Inc.

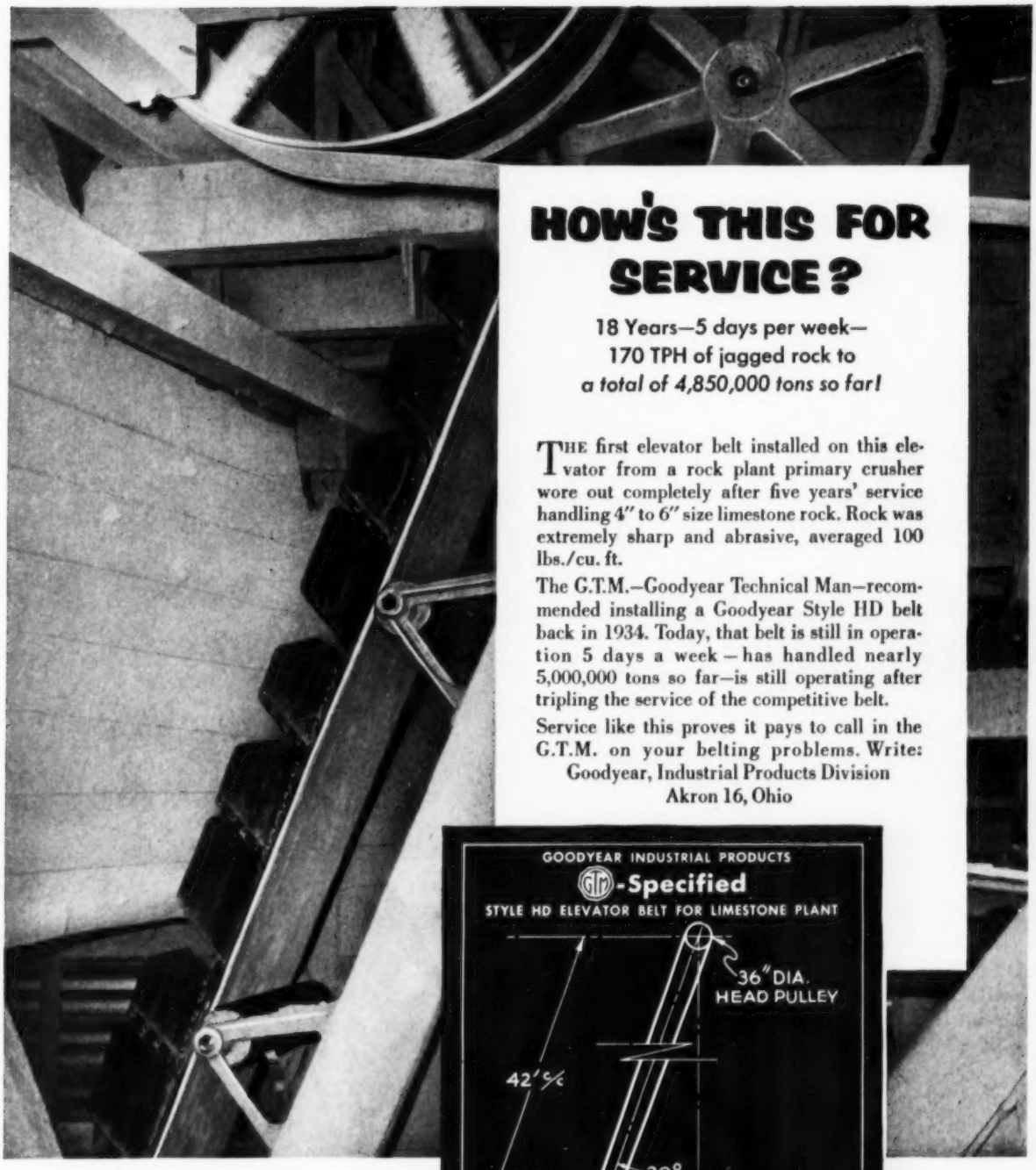
1750 WALDEN AVE. BUFFALO 25, N. Y.


SINGLE DECK


DOUBLE DECK


TRIPLE DECK

THREE AND ONE HALF DECK



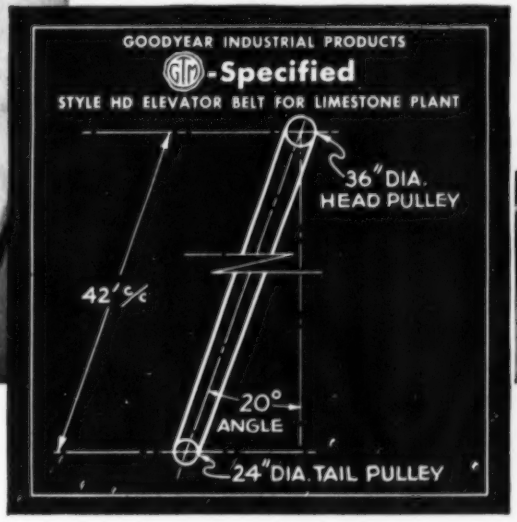
HOW'S THIS FOR SERVICE?

18 Years—5 days per week—
170 TPH of jagged rock to
a total of 4,850,000 tons so far!

THE first elevator belt installed on this elevator from a rock plant primary crusher wore out completely after five years' service handling 4" to 6" size limestone rock. Rock was extremely sharp and abrasive, averaged 100 lbs./cu. ft.

The G.T.M.—Goodyear Technical Man—recommended installing a Goodyear Style HD belt back in 1934. Today, that belt is still in operation 5 days a week—has handled nearly 5,000,000 tons so far—is still operating after tripling the service of the competitive belt.

Service like this proves it pays to call in the G.T.M. on your belting problems. Write: Goodyear, Industrial Products Division, Akron 16, Ohio



YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing, Tank Lining, Rubber-Covered Rolls: Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

GOODYEAR

THE GREATEST NAME IN RUBBER

He Knows!

EXPERIENCE is the truest guide to production efficiency and economy... and experience in the quarries proves that Roebling wire rope is your one top choice for avoiding delays, cutting down replacements and saving wire rope dollars.

All over the country, large numbers of experienced wire rope users definitely prefer Roebling wire rope. Call your nearest Roebling office or distributor for a Roebling recommendation.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 916 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

Grenci & Ellis, Inc., Frankfort, Maine, is one of many progressive New England quarry operators that enjoys smooth and dependable equipment performance with the help of Gulf Service and Gulf Quality Products. This firm quarries granite, which is loaded onto flat cars (shown below) for the trip to the finishing shed, where they are cut, chipped, and polished. The huge block of heavy granite shown in the inset is being cut to specifications for use in the United States Courthouse Building, Washington, D.C. Their fleet of trucks, which in addition to their other equipment is serviced 100% by Gulf Quality Lubricants and Fuels, takes the finished granite blocks to the various projects where they will be used.

Gulf Quality Lubricants *and* Fuels

keep equipment operating smoothly at Grenci & Ellis, Inc.

With higher-than-ever operating costs threatening every dollar of profit, it will pay you to take stock of the advantages of Gulf Service and Gulf Petroleum Products.

Advantages like these, for example: Quality lubricants that provide an extra margin of protection for every gear and bearing; fuels that insure full power for every engine; expert petroleum engineering counsel; and prompt delivery service. You'll find, as have so many leading quarry operators, that they all add up to fewer mechanical delays, lower maintenance costs, and an all-round smoother operation.

Gulf Quality Products and Services are available to you in 31 states from Maine to New Mexico. Write, wire, or phone your nearest Gulf office.

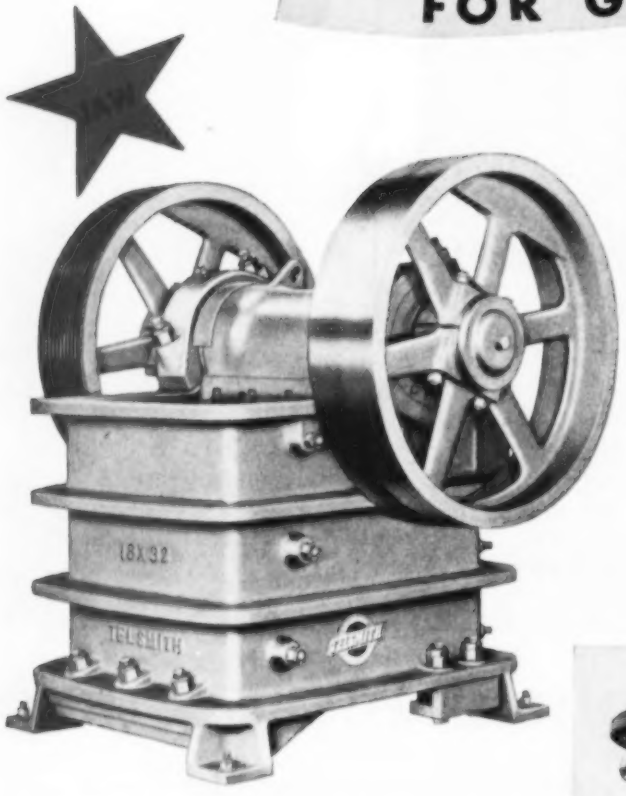
GULF OIL CORPORATION
GULF REFINING COMPANY
PITTSBURGH 30, PA.

GULF SERVES INDUSTRY

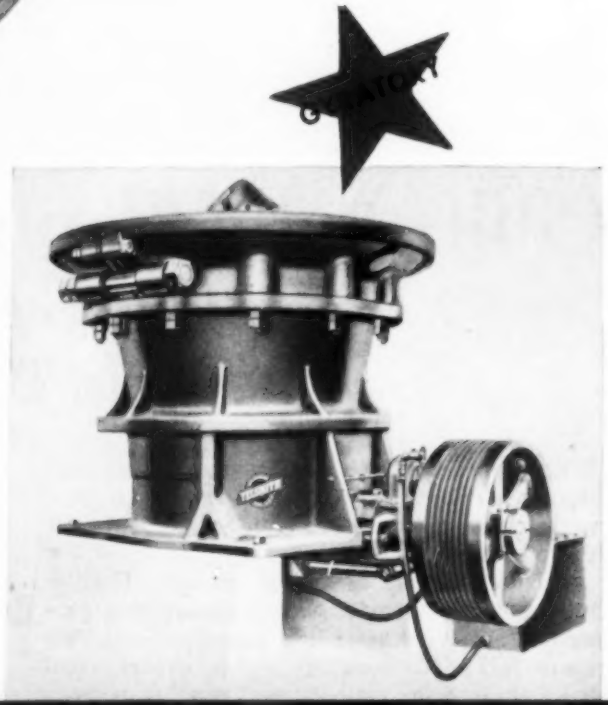
TELSMITH®

PRIMARY

FOR GREATER CAPACITY



● **Telsmith Jaw Crusher** has a compact, massive cast steel frame and swinging jaw . . . with large cylindrical roller bearings throughout for higher speed, bigger capacity, and lower power requirements. With its vigorous, force feed, and remarkably effective crushing action, the Telsmith Jaw Crusher turns out a more uniform and cubical product, in larger capacities. Its easy, simple adjustment allows a wide product size range. Made in 9 sizes, from 10″ x 16″ to 30″ x 42″, 22 to 240 tons per hour. Send for Bulletin 280.



● **Telsmith Gyratory Breaker** is short and compact. Steel frame and crown, and rigid pillar shaft are all guaranteed against breakage. Largest feed and crushing areas of any gyratory breaker . . . the famous Telsmith parallel-pinch crushing stroke . . . cut steel drive gears, improved full, force-feed oiling and a roller bearing countershaft give not only faster crushing but crushing by impact, for a better cubical product. 7 sizes: 6B to 25B, 26 to 400 tons per hour. Get Bulletin 281.

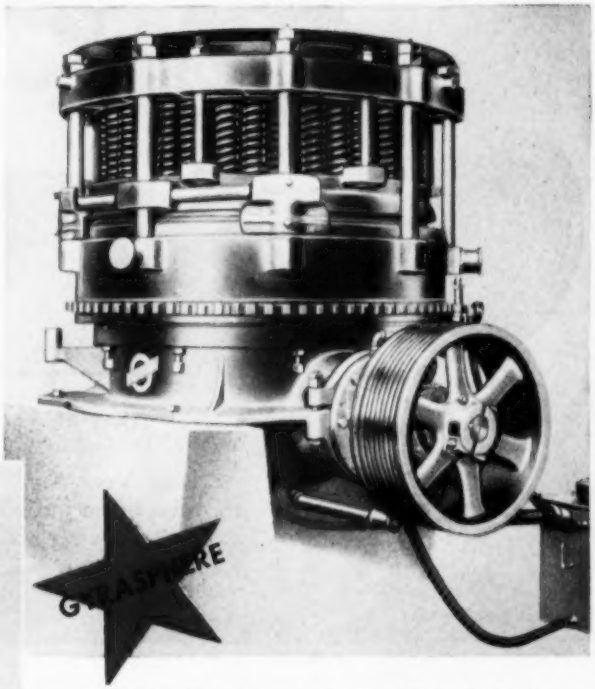
S. MITH ENGINEERING WORKS
3004 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

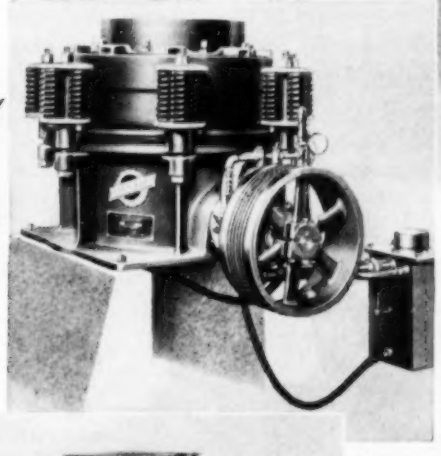
CRUSHERS

SECONDARY

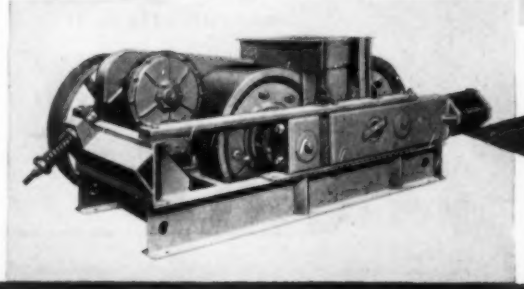
LOWER COSTS • BETTER PRODUCTS

● **Telsmith Style S Standard Gyrasphere** has new, heavier design with many time-tested features for greater capacity, a more uniform product, low-cost operation, and quick accessibility for easier maintenance. 24″ to 48″ sizes, coarse or medium bowl; 45 to 300 tons per hour. New 489-S size has 10″ receiving opening. *Style FC Fine Crushing Gyrasphere* has all Style S features with several additional fine crushing improvements. 24″ to 48″ sizes; medium or fine bowl, 15 to 125 tons per hour. Send for Bulletin 274.





● **Telsmith Intercone** is an all-steel, high-speed, lower priced secondary crusher. Turns out very uniform, cubical, coarse or intermediate product. Lead bronze bearings, Telsmith patented rotary seal, roller bearing countershaft, full force feed oiling, spring relief protection. 18″ to 28″ sizes; 26 to 70 tons per hour. Get Bulletin 270.



● **Telsmith Double Roll** for large capacities of intermediate or fine aggregate at low reduction ratios. Compact, light in weight, low in cost. Anti-friction bearings run in oil. 24″ x 16″ to 40″ x 22″ sizes. 75 to 132 tons. Get Bulletin 282.

CS-8

Telsmith Authorized Representatives, Sales Locations

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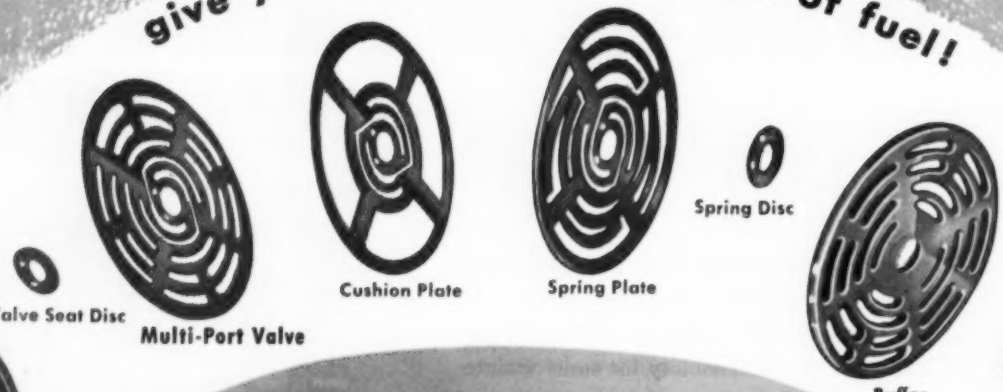
DAVEY COMPRESSORS with Multi-Port Valves

give you more air per gallon of fuel!



DAVEY Multi-Port Valve Assembly

Ask any owner of a new **Multi-Port Valve** Davey. He'll tell you that he is getting more air from less fuel than he ever believed possible.

Davey's new **Multi-Port Valves** set new standards of economical compressor operation. In addition, they never carbon or foul . . . do not require replacement, assure constant full air volume, keep tools operating at peak efficiency.

A-7287

Davey Super Chief 600 delivers 600 c.f.m. with minimum fuel consumption. It is lightweight, compact, easy to transport from place-to-place.

DAVEY

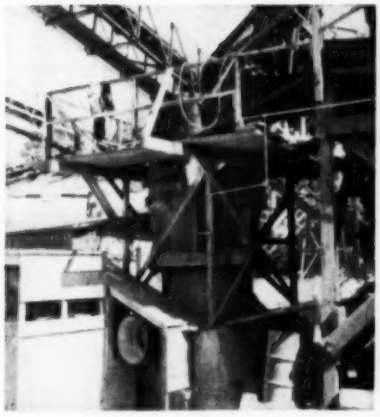
pioneers of "air-cooled air"

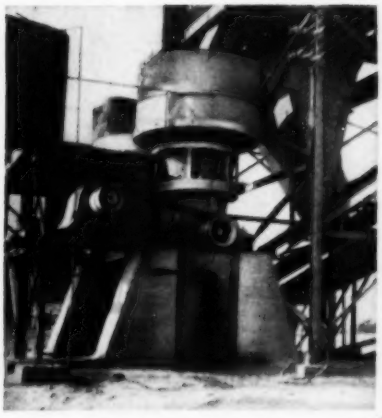
Ask your Davey Distributor for data on standard 60 to 600 c.f.m. Davey portable and industrial compressors; "Auto-Air" (truck-mounted) compressors; Mobile Machine Shops and Field Service Units.

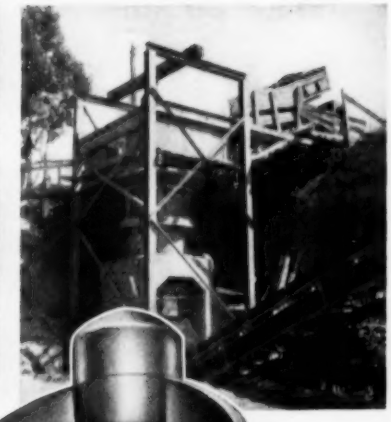
DAVEY COMPRESSOR CO. • KENT, OHIO

806 OWNERS OF TRAYLOR TY REDUCTION CRUSHERS SAY

Production is the Payoff...





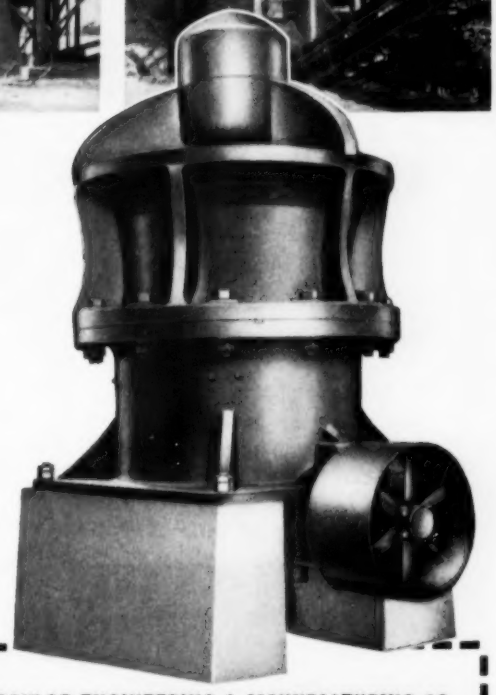


Greater Tonnage...Greater Profits

THE EXCLUSIVE Traylor design features and extra-heavy construction of a TY Reduction Crusher increase your production tonnage by reducing maintenance down-time and boosting hourly out-put with fewer waste fines.

Traylor TY's original, self-tightening bell head and curved concaves apply crushing power with greater efficiency. Increased capacity of each succeeding zone in the crushing chamber permits fine settings to produce greater tonnages with reduced power requirements.

Type TY Traylor Reduction Crushers are of compact design . . . incorporating maximum strength with simplified operation. Six sizes with feed openings from 3″ to 22″. Send for free bulletin 7112.



Traylor

TY REDUCTION CRUSHERS

TRAYLOR ENGINEERING & MANUFACTURING CO.
1576 MILL ST., ALLENTOWN, PA.

Send me Bulletin 7112 with complete description, illustrations and specifications on Traylor TY Reduction Crushers.

Name: _____

Position: _____

Company: _____

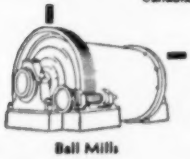
Address: _____ *State:* _____

Sales Offices: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

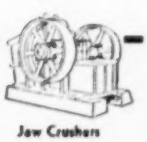
sry Gyratory Crushers

Rotary Kilns

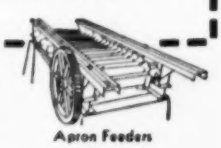
Secondary Gyratory Crushers



Ball Mills



Jaw Crushers



Apron Feeders

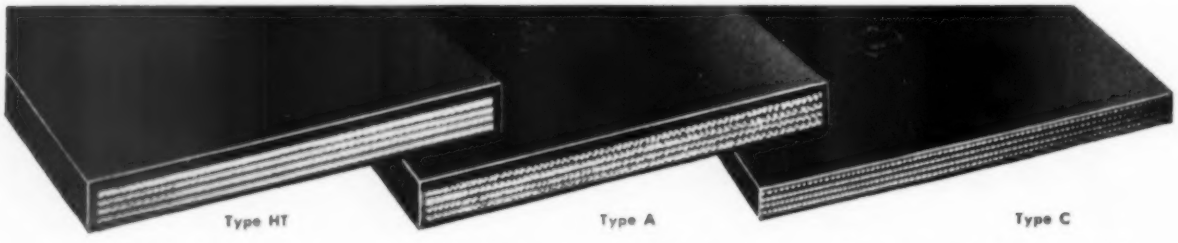
Thermoid can cut your handling cost per ton

Regardless of the weight, abrasive action or temperature of the materials you handle, there's a Thermoid Conveyor Belt that will stay on the job longer, reducing your handling cost per ton.

Thermoid Conveyor Belting for mining, quarrying or heavy construction work is designed for maximum service in these specific uses. Strong cotton fabrics, thoroughly impregnated with high test rubber friction, are combined with tough, wear-resistant rubber covers. Welded together under extremely high pressures to assure exceptionally strong, durable belting.

Your Thermoid Distributor can help you select the belt best suited to your needs. If your problem is unusual, he'll call an experienced Thermoid Sales Engineer.

Thermoid Belting specifically designed for mine, quarry and construction work:



For highly abrasive granite, flint rock, quartz ore, etc.

For slag, lime rock, crushed stone and hot material.

For sand, gravel, loam and finished cement.

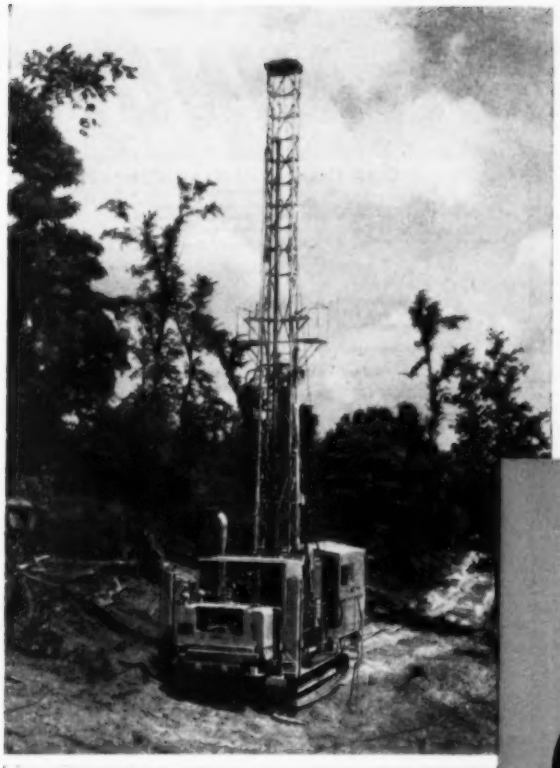
Write for Thermoid Conveyor Belting Catalog #3679, containing full engineering data.

Thermoid

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



The machine that has revolutionized BLAST HOLE DRILLING

The JOY CHAMPION

There are no water lines to worry about with a Joy Champion. As the tri-cone bit cuts, a blast of air blows the cuttings to the surface and into a bag-type dust collector.

W&D 4630

The Joy Champion Blast Hole Drill is a continuous-type rotary drill that DRILLS DRY—you can forget water lines and all their Winter freezing problems.

Drilling is by a tri-cone roller bit which pressure-cuts the rock while a cooling air blast is forced down the drill pipe and through the bit. Cuttings are blown to the surface where they are captured—with 100% efficiency—by a new, optional, bag-type dust collector.

The Joy Champion drills straight, smooth-walled, easily loaded holes, from 5⅝″ to 7⅞″ dia. to any normal depth required. It trams at 5 mph and sets up quickly with 3-point hydraulic leveling. The two models—Mediumweight and Heavyweight—can be furnished with either electric motor or diesel drive. ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

JOY

SINCE 1851—OVER A HUNDRED YEARS OF ENGINEERING LEADERSHIP

9 TONS of SAND Per MINUTE

WITH A 14X12 THOMAS SAND & GRAVEL PUMP

LINDER DEIMUND, CAPE GIRARDEAU SAND MAN, SAYS:

CAPE GIRARDEAU SAND COMPANY
(Incorporated)
Southeast Missouri's Largest Producers of
WASHED AND SCREENED RIVER SAND

CAPE GIRARDEAU, MISSOURI

October 14, 1953

Thomas Foundries, Inc.
P. O. Box 1111,
Birmingham, Alabama

Gentlemen:

In January 1952 we selected one of your Thomas Durable Dredge Pumps, size 14x12, for installation on our new No. 6 Dredge.

Having spent thirty-three years of my life on dredges and having worn out many pumps during that time, I selected your pump for its modern design and being made of Ni-hard metal. We wanted a pump that could be overhauled in a hurry when repairs were necessary, and we like this feature of your pump very much.

Recently we took off the suction line and side plates of our pump, to see what wear had taken place, and we are pleased to state herewith that, after about one year's service you could hardly see any wear on the Impeller or Side-plates.

We often produce three hundred ton barge loads of sand in from 32 to 45 minutes, with only one man to assist me, and quite often I operate the entire dredge by myself.

We are very well pleased with our Thomas Durable Dredge Pump. This is the finest pump I have ever used and can highly recommend it to anyone in the dredging business.

Yours very truly;
CAPE GIRARDEAU SAND COMPANY,
By Linder Deimund

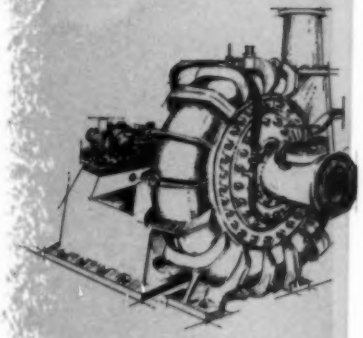
"Durable Dredge Pumps, size 14x12"

"modern design and being made of Ni-hard metal"

"after about one year's service you could hardly see any wear"

"three hundred ton barge loads of sand in from 32 to 45 minutes"

"finest pump I have ever used"



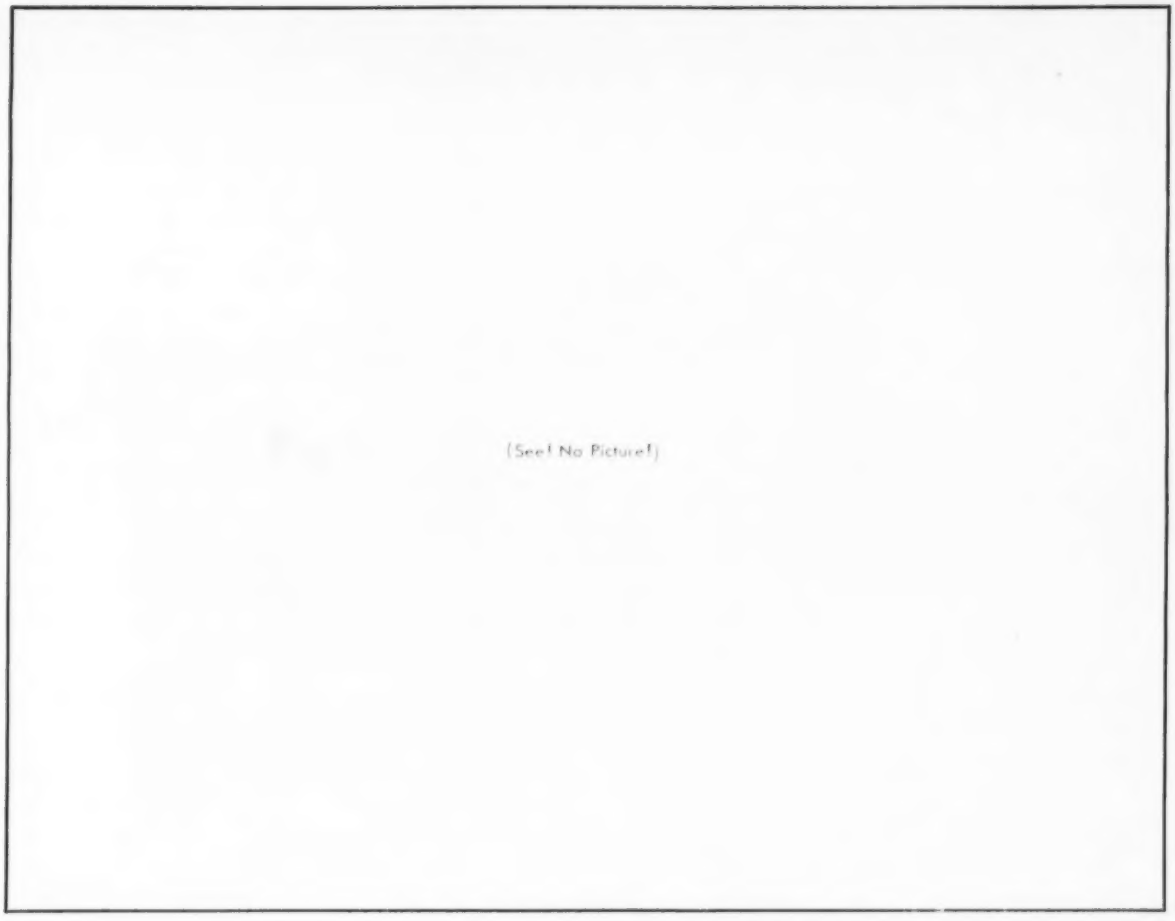
Here is a sand man talking to sand men and when he says Thomas "is the finest pump I have ever used" it's time for you to find out what he's talking about.

Linder Deimund has been in the sand and gravel business 33 years, now operates a company which is one of the largest producers of sand in southeast Missouri. Read what he says about his year's experience with a Thomas pump.

Write for literature explaining how Thomas Dredge Pumps are made differently from conventional pumps . . . different in design and different in materials. We will send you letters from other users, too, who are as enthusiastic about Thomas pumps as Mr. Deimund. Write or wire today.

THOMAS FOUNDRIES, Incorporated

P. O. BOX 1111, BIRMINGHAM, ALABAMA



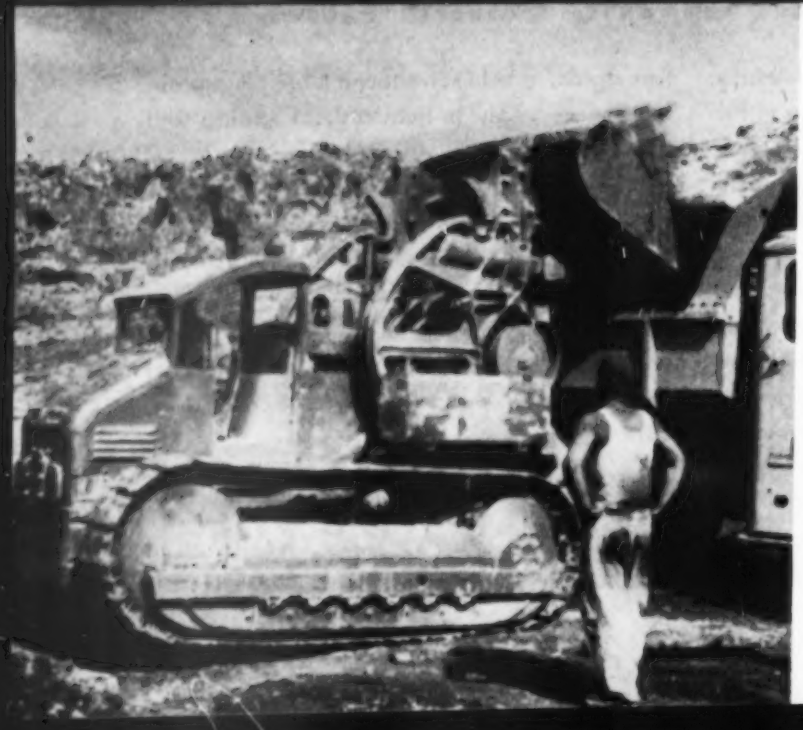
We thought we'd catch your eye and give it a break at the same time!

Most of you mining and quarry men undoubtedly follow, as we do, all of the top magazines in the field. You have to, in your business. We have to, in ours. And if you're anything like us you've probably gotten tired of seeing the same sort of pictures, page after page.

SO WE THOUGHT WE'D CATCH YOUR EYE, AND GIVE IT A BREAK AT THE SAME TIME by not showing any picture at all! As for selling you, we feel we can rely on the acceptance and popularity the great Cities Service name enjoys throughout the industry. ACCEPTANCE because our industrial oils and greases are as good as the best in every case, better in most! POPULAR because Cities Service Engineers have gone out of their way, time and time again, to help solve tough lubricating problems successfully in hundreds of mining and quarry operations.

If you have a tough problem on your hands, call in our Lubrication Engineer for help . . . and take advantage of the tremendous research staff and laboratory facilities that back up every Cities Service Lubrication Engineer. Simply call or write your nearest Cities Service Office, or write Cities Service Oil Co., Dept. L15, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE
QUALITY PETROLEUM PRODUCTS



Yes! The Eimco 105 is the world's finest tractor excavator! This is the first unit ever designed and built from the ground up with the purpose of performing as a base for heavy-duty attachments to its own frame so that it could be used efficiently for handling many jobs in addition to hauling around other equipment. The 105 is designed for heavy shock vertical loads as well as normal loads imposed through straight drawbar pull.

The Eimco 105 operates freely under all loading conditions, will dig, excavate or bulldoze on even or uneven ground because of its full oscillating track feature even with the bucket attachment.

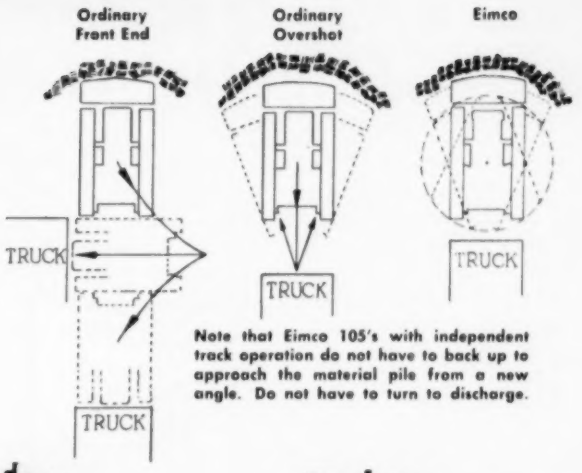
WITH COST SAVING ADVANTAGES

SAVES TIME: Simple, conveniently located handles held in one hand control all movements. Push for forward — pull for reverse — twist for spin turns. This easy control simplifies the operator's work — eliminates turning to dump — eliminates foot clutches and hand shifting and pull brakes — keeps the trucks up close and speeds up the loading cycle.

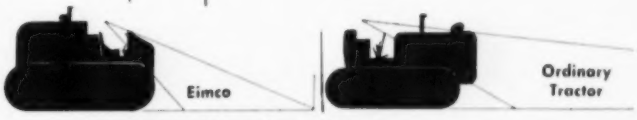
GREATER DEPENDABILITY: Simple, strong construction of the great new Eimco transmission provides greater dependability. This compact unit contains all of the gearing and clutches for speed changing and full independent reversal of each track. Every moving part is pressure lubricated. The oil-cooled, positive engagement clutches never need adjustment.

BETTER VISABILITY: The operator in the Eimco 105 sits up front where he can see the work that's being done.

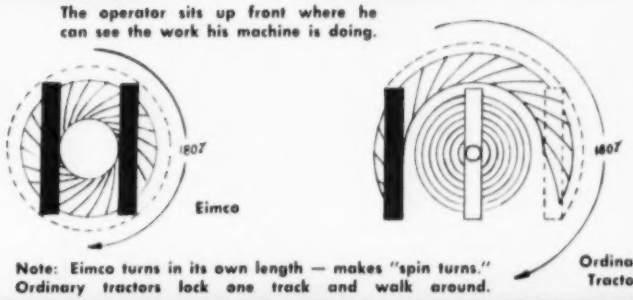
GREATER FLEXIBILITY: The 105 covers the upper bracket range of work done by several models of ordinary tractor equipment in several different price and weight brackets. With the 105 priced with the lower of this group, yet powerful enough to do many of the jobs for which the larger, more expensive, units are employed.



Note that Eimco 105's with independent track operation do not have to back up to approach the material pile from a new angle. Do not have to turn to discharge.



The operator sits up front where he can see the work his machine is doing.



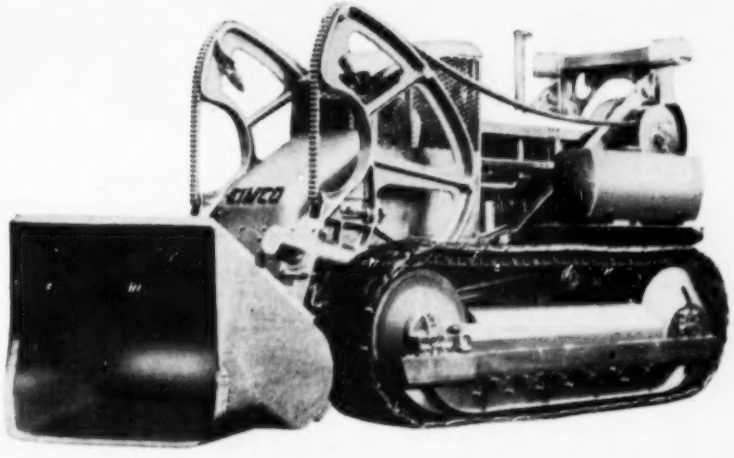
Note: Eimco turns in its own length — makes "spin turns." Ordinary tractors lock one track and walk around.

THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.

Export Office: Eimco Bldg., 52 South St., New York City

STRONGER CONSTRUCTION THROUGHOUT: The 105 is made of steel — not cast iron. There is quite a difference in these two construction materials. Cast alloy steel as used in the 105 is not subject to shock cracks even under severe operating conditions. Steel stands strains and stresses imposed by heavy loads without danger of failure. The Eimco 105 is the only crawler unit made of steel and gives you a superior machine with longer dependable life and lower maintenance costs. This is the machine for your next heavy job. Let us send an Eimco engineer to tell you the facts.



The Eimco 105 — world's finest tractor-excavator

IMPROVE YOUR CLASSIFYING OPERATIONS

WITH RAYMOND WHIZZER SEPARATION

THE Whizzer principle of classification . . . a special feature of the Raymond Mechanical Air Separator . . . gives such superior results in closed circuit grinding operations that Raymond installations are typical of modern-equipped plants for making finely powdered products.

The *whizzer action* concentrates the oversize along the surface of the inner cone, facilitating its discharge. The resultant advantages of the Whizzer Mechanical Air Separator are:

- ✓ Closer separation of the fines and cleaner tailings
- ✓ Fineness adjustable externally for production of standard and high early strength cements
- ✓ Greatly increased mill output as compared to open circuit operation.
- ✓ Maximum recovery of finished material and uniformity of product
- ✓ Overall economy in power, maintenance and operating costs

For a better return on your separating equipment, specify Raymond Whizzer Air Separators. Available in a full range of sizes with single or double whizzer.

DOUBLE WHIZZER TYPE
MECHANICAL AIR SEPARATOR
Sizes: 4'0" to 18'0" Diameter

30-INCH SEPARATOR for small commercial applications and laboratory use

LABORATORY SEPARATOR for running test operations

Write for detailed information today.

COMBUSTION ENGINEERING, INC.

Raymond Division

1321 NORTH BRANCH ST.
CHICAGO 22, ILLINOIS

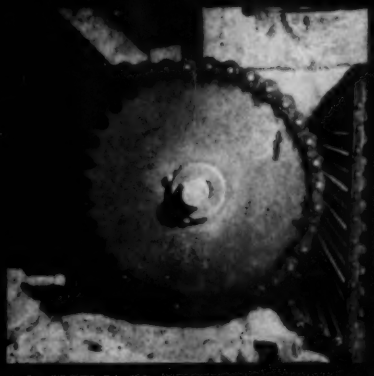
SALES OFFICES IN
PRINCIPAL CITIES

time after time after time

CASE NO. 1

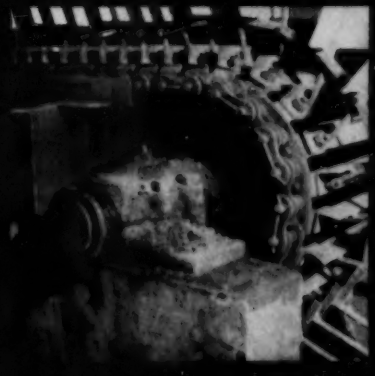
CEMENT PLANT—TSP Sprockets installed Aug., 1947 on head of aggregate elevator. Competitive sprockets lasted only 12 months. TSP superiority—5.7 to 1 and showing practically no wear.

CASE NO. 2



ASBESTOS CEMENT SIDING—TSP Sprockets installed May, 1950 on drying oven drive. Competitive sprockets lasted only 4 months. TSP superiority—over 5 to 1, still in service, hardly worn.

CASE NO. 3



CEMENT PRODUCTS—TSP Sprockets installed Sept., 1950 on conveyor. Competitive sprockets lasted only 8 months. TSP superiority—4.4 to 1 to date and still in service, hardly worn.

TSP Sprockets outlast competition

HERE'S WHY: TSP Sprockets are hardened by our special process. The file hard surface to the full depth of permissible wear gives maximum life. In addition TSP smooth surface reduces wear on chains. The core, refined for toughness and ductility, gives maximum strength.

You receive an absolutely positive written guarantee that TSP products will give a longer life in the same service than any other product.

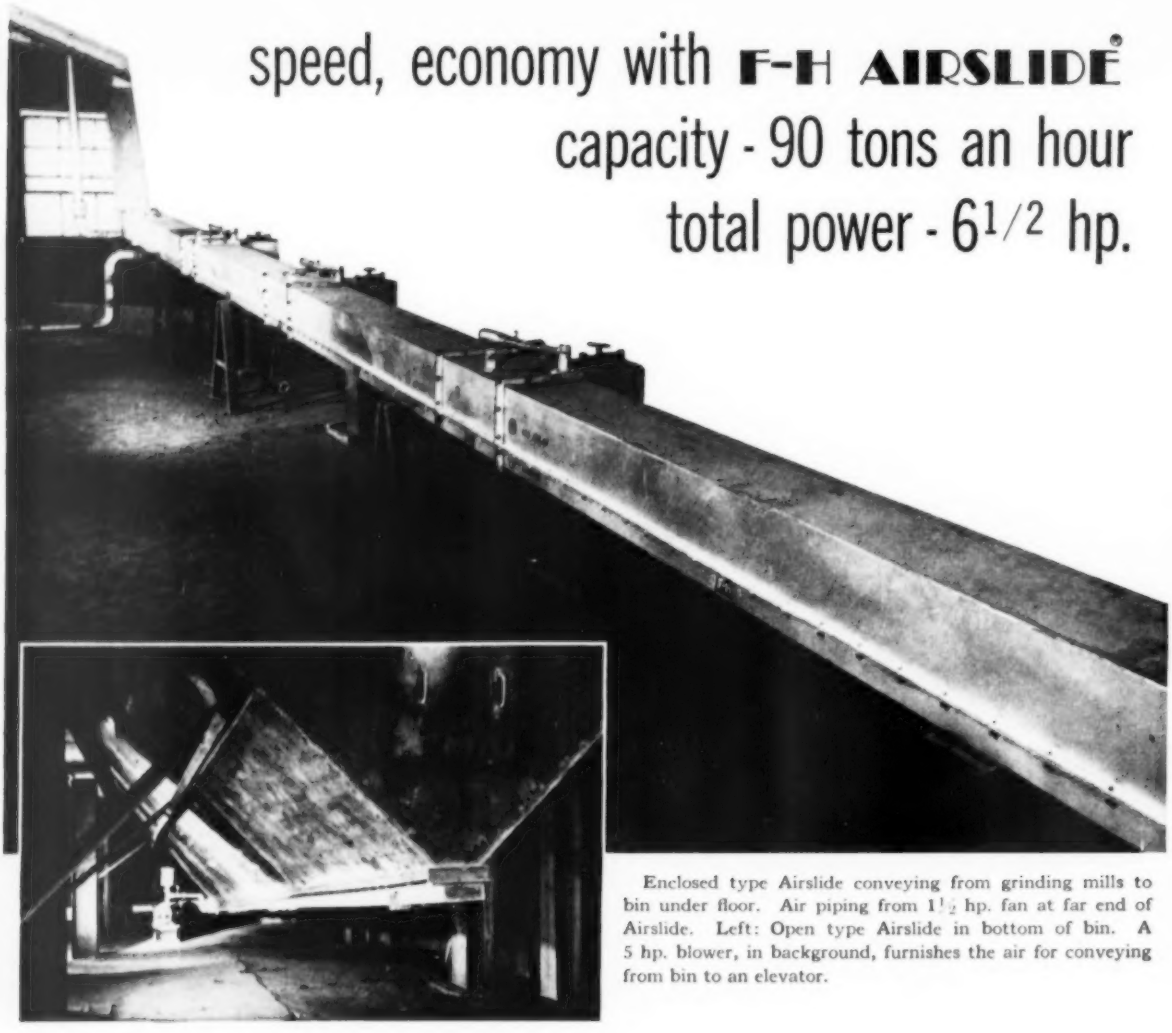
The Standard of Quality Since 1909
for Gears • Pinions • Rolls • Wheels
& Other Hardened Products

THE TOOL STEEL GEAR AND PINION CO.
CINCINNATI 16, OHIO, U. S. A.

Write today for Bulletin No. 1153

AD 186-7-8

speed, economy with F-H AIRSLIDE®
capacity - 90 tons an hour
total power - 6 1/2 hp.



Enclosed type Airslide conveying from grinding mills to bin under floor. Air piping from 1½ hp. fan at far end of Airslide. Left: Open type Airslide in bottom of bin. A 5 hp. blower, in background, furnishes the air for conveying from bin to an elevator.

Again, the F-H Airslide Conveyor has proved to be the best way to move dry, pulverized material. The installation illustrated, like many others, has cut handling costs. Hazards to workmen have been eliminated. Power costs are negligible. There are no breakdowns and costly repairs. Material, aerated to flow like a fluid, travels from grinding mills to bin, from bin to elevator, at rate of 90 tons an hour. Power requirements? One blower and one fan: total 6½ horsepower.

Side discharge valves installed in the Airslide above the bin may be set, either to direct entire material flow through one spout, or divert any portion of the material stream to obtain a desired distribution and mix in the bin below the floor.

If your conveying costs are cutting into profits, consult a Fuller engineer. He will be glad to study your problem and submit recommendations, without any obligation.

Fuller
CONVEYS BY AIR
...NOTHING MOVES BUT THE MATERIAL

Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS · COMPRESSORS AND VACUUM PUMPS · FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY, Catasauqua, Pa.
Chicago 3 · 120 S. LaSalle St.
San Francisco 4 · 564 Market St.
Los Angeles 36 · 5225 Wilshire Blvd.
Seattle 9 · 120 6th Ave. N.
Birmingham 3 · 2000 1st Ave.

FH-37
1963

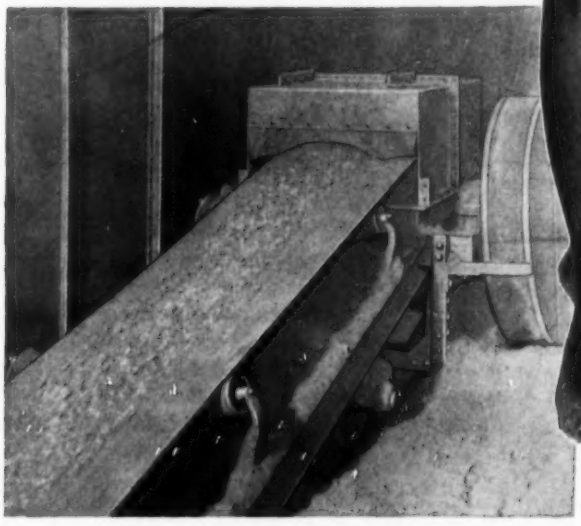
Dont...

Let dark glasses blind you to tramp iron losses!

If tramp iron is dealing knock-out blows to your production, or to your machinery—there is a positive, proven method of turning these losses into profits, automatically—by magnetic separation.

Homer permanent magnetic separators have been accepted everywhere in industry, as the ideal method of efficiently removing tramp iron. They give production a lift—they increase efficiency—they eliminate down-time.

If tramp iron is your problem, we invite you to write us. Homer engineers are specialists in magnetics and will be happy to assist you in any way possible. There is no obligation for a study of your requirements. The Homer Manufacturing Co., Inc., Dept. I-52. Lima, Ohio.



A 30" x 30" Homer heavy duty permanent magnetic pulley, though unseen, is driving the 20% troughed type belt conveyor shown above. This conveyor is handling bauxite ore at the rate of 300 tons per hour. Belt speed is 220 feet per minute (28 rpm on the headshaft). The Homer pulley automatically eliminates any tramp iron that may be present.

Remember...

with a

HOMER...

you are

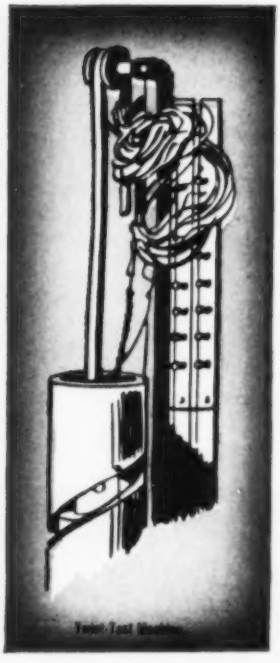
Certain!

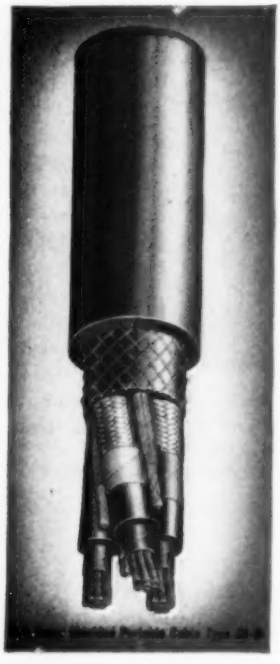
HOMER

U. S. Royal Cables are
Tough!

● U. S. Royal Cords and Cables must undergo half a dozen tough tests—to make sure they can stand up under the rigorous demands of modern mining. That is why a U. S. Royal Cable is *always reliable.*

United States Rubber Company is the only wire and cable producer to grow its own natural rubber, to make its own synthetic rubber and its own plastics. "U. S." controls the quality of its product at every step of its growth and manufacture.





Trailing Cables are often subjected to severe twisting in operation. To make sure that U. S. Royal Cables can take it, they are subjected to a combined twist-bend test. In this test a 42-inch length of cable is twisted radially 90 degrees in one direction, untwisted and twisted 90 degrees in the opposite direction. While being subjected to this 180-degree twist test and while supporting a 50-lb. weight, the cable is repeatedly bent over a sheave having a diameter approximately 3 times the diameter of the cable. Most U.S. Royal Cords and Cables are required to withstand 3,000 of the above twist-bend cycles before failure.

● ● ●

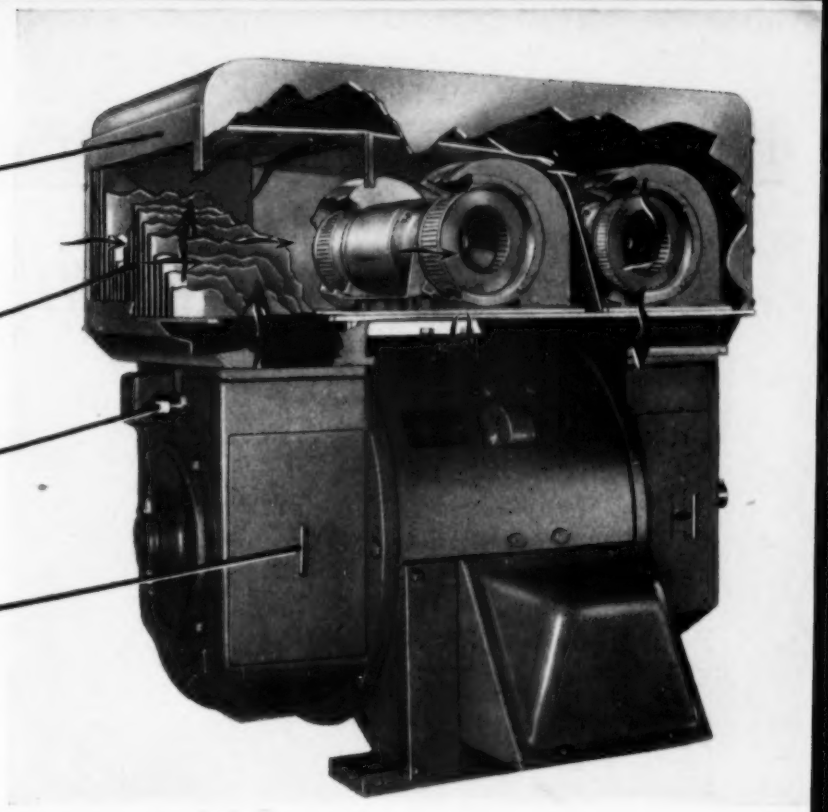
Write to address below for free catalog, "U. S. Electrical Wires and Cables," describing the complete line.

UNITED STATES RUBBER COMPANY

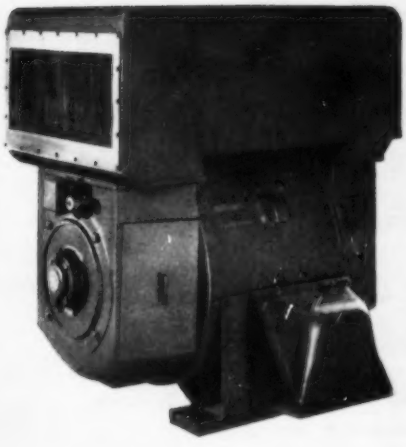
U.S.RUBBER
SERVING THROUGH SCIENCE

Electrical Wire and Cable Department

ROCKEFELLER CENTER • NEW YORK 20, NEW YORK


COMPACT, top-mounted cooling unit falls within the over-all length and width of main motor.
SMOOTH vertical plates are self-cleaning. Cooling unit is easy to remove for inspection.
PROTECTIVE THERMOSTAT helps safeguard main motor in case of blower-motor power failure.
EASY ACCESS to inspection opening—no tools required.

General Electric Announces New Unit-Cooled D-C Motor!



THE SMOOTH STYLING of the new unit-cooled motor is in harmony with good machine design. Smooth contours facilitate cleaning. No ducts or piping are needed on this compact, ready-to-install unit.

Smallest of type from 15-200 hp, new motor features 50% greater heat transfer in 37% smaller unit than previous design.

To meet your industry's need for a compact, totally enclosed motor, this new General Electric unit-cooled design features more effective heat transfer in a smaller unit.

Special construction assures dependable operation, with minimum maintenance, in the severe atmospheres which make open or partially enclosed motors difficult to maintain.

Shutdowns for cleaning and inspection are reduced to a minimum. Air-borne contaminants and foreign particles are kept out of the internal ventilating air by the totally enclosed construction

For additional information on ratings and dimensions, contact your nearest General Electric office or write for Bulletin GEA-6091, "Unit-cooled D-C Motors." Address Section 770-31, General Electric Company, Schenectady 5, N. Y.

You can put your confidence in—

GENERAL ELECTRIC

High Production and Lower Maintenance–

You Get BOTH with "Eucs"

Built for tough off-the-highway service, Rear-Dump Euclids have increased production and reduced hauling costs on scores of open pit mining and quarry operations. Ability to deliver "plus" performance year in and year out has made "Eucs" the accepted standard for comparison . . . here are some of the reasons why:

RUGGED SIMPLICITY

Designed and built for long life and low maintenance cost. All of Euclid's experience and facilities are devoted to specialized off-the-highway earth moving equipment.

CAPACITY

Euclids have payload capacities of 10, 15, 22, 34 and 50 tons. Because they are matched to various sizes of loading and crushing equipment, "Eucs" provide a well balanced operation for open pit haulage and increase the efficiency of the loading unit.

POWER AND SPEED

Powered by diesel engines of 125 to 600 h.p. "Eucs" have top speeds with full payload, up to 36 m.p.h. Five and ten speed transmission, or torque converter with semi-automatic transmission available. The favorable ratio of horsepower to payload means more pay tons hauled every trip.

VERSATILITY

"Eucs" are efficient for moving any material on any length of haul; handle overburden, rock, coal, ore and other materials loaded by shovels, draglines, transfer hoppers and mobile loading equipment.

If you are interested in higher production at lower cost, have your nearby Euclid Distributor show you what "Eucs" are doing on work similar to yours. He'll be glad to make a hauling cost estimate for your job—no obligation, of course.

The EUCLID ROAD MACHINERY Co.

SUBSIDIARY OF GENERAL MOTORS CORPORATION

Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK COAL AND ORE

CARBIDE INSERT? or MULTI-USE?
LOCATION: U. S. Highway #30 between Cheyenne and Laramie, Wyoming.
OPERATING CONDITIONS: Drilling abrasive sandstone and very hard, abrasive quartzite.

Brown Construction Co. cuts costs on highway job by using TIMKEN® carbide insert bits to drill quartzite, multi-use to drill sandstone

BROWN Construction Company has found a way to cut drilling costs on its modernization job of U. S. Route #30 between Cheyenne and Laramie, Wyoming. How? By using Timken® multi-use rock bits to drill sandstone; and Timken carbide insert rock bits to drill quartzite.

Timken multi-use bits are most economical for ordinary ground like sandstone. With correct and controlled reconditioning, they give the lowest cost per foot of hole when full increments of steel can be drilled.

For hard and very abrasive ground, like quartzite, Timken carbide insert bits are the best answer for highest speed. They're also most economical for constant-gage holes, small diameter blast holes and very deep holes.

Best of all, both Timken carbide insert and multi-use bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel. You can change bits quickly, easily as the ground changes—right on the job. Both Timken carbide insert and multi-use bits are made from electric furnace Timken fine alloy steel and have special shoulder unions which protect threads from drilling impact.

Make sure you use the best bit type for your particular drilling requirements. Call on the Timken Rock Bit Engineering Service. Twenty years of rock bit experience have made the Timken Company the leader in the field. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

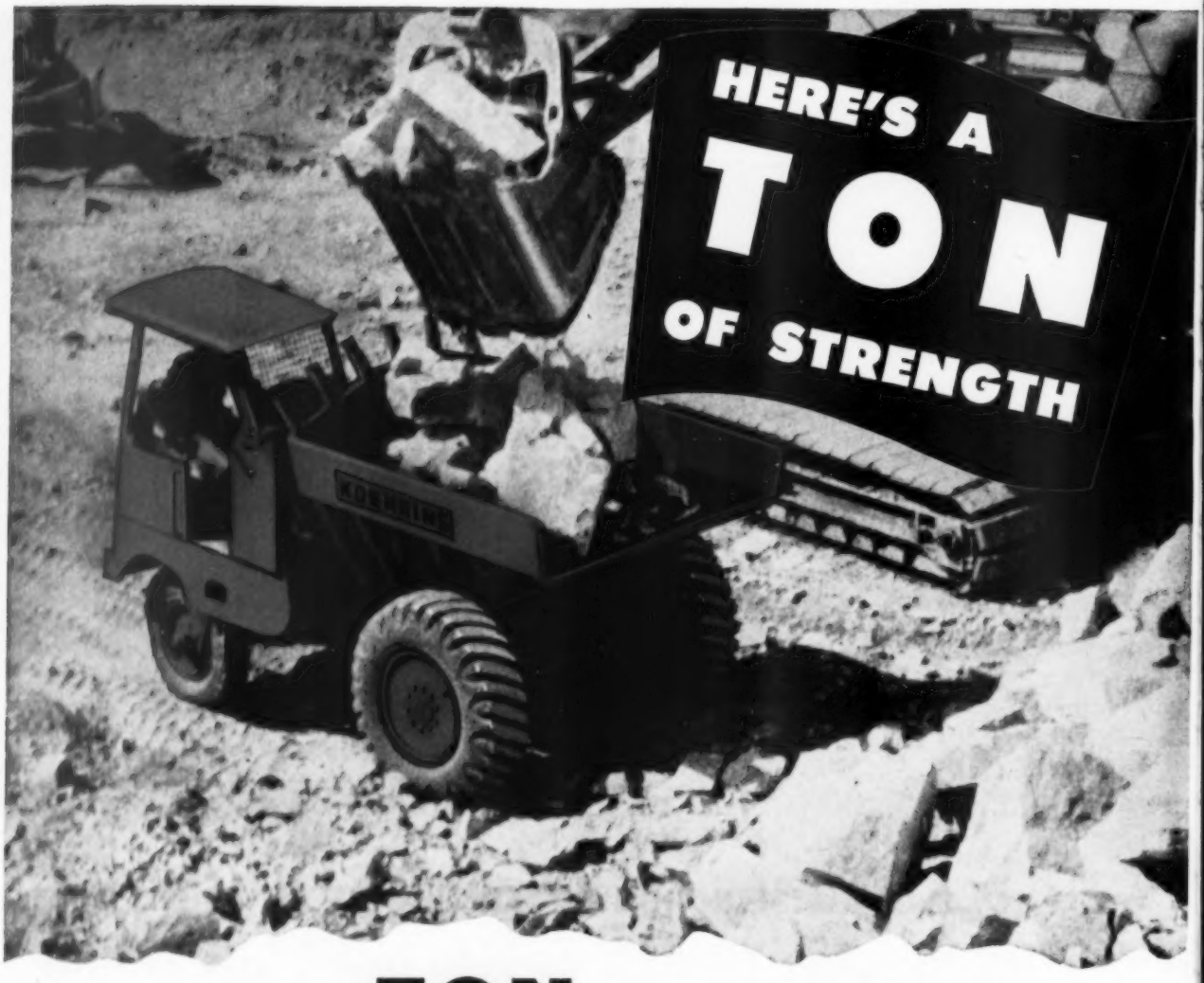
Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

your best bet for the best bit ...for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.



FOR EVERY TON OF PAYLOAD . . .

When you're loading 1½ to 2½ yards of rock at a pass, hauling units need plenty of strength to last. With Koehring heavy-duty Dumptors, you have a ton of net vehicle weight for every ton of payload capacity. Sides, ends and bottom of all-welded 6-yard body are heavily reinforced with 5 and 8" channel ribs. Double-strength, multiple rib-reinforced bottom cushions shocks of rock loading. Stationary or free-swinging kick-out pan adds another ½" steel plate to Dumptor bottom for extra strength.

There's plenty of strength, too, in the Dumptor chassis to take the constant pounding of heavy loading and rough off-road hauling. Heavily-trussed 8" ship channels make up the main frame. 4" chrome steel drive axles are protected by heavy-cast one-piece steel housing. "I"-beam steering axle is cast alloy steel. There are no leaf springs — just one big snubber-type chassis spring on the steering axle — none on drive axle. Big drive tires eliminate need for more springs, absorb loading and hauling shocks, save spring maintenance.

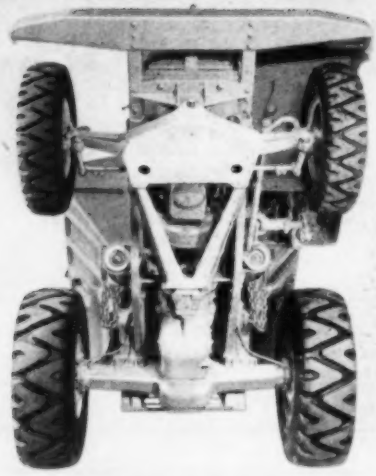
Even with this heavy-duty construction, Koehring Dumptors have 6 HP per ton of gross weight — accelerate fast, pull through soft ground and up grades with less shifting — climb 24% grades fully loaded. For less down-time, more work-time, put heavy-duty Dumptors on your jobs.

CK339REV

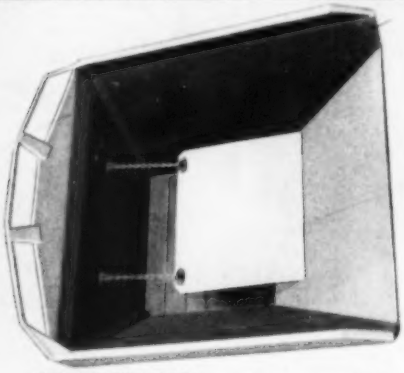
SEE YOUR KOEHRING DISTRIBUTOR FOR COMPLETE FACTS

KOEHRING DUMPTOR®

KOEHRING COMPANY, MILWAUKEE 16, WIS. • SUBSIDIARIES: • KWIK-MIX • PARSONS • JOHNSON



NO "SOFT SPOT" on Dumptor's underside . . . 1-piece, cast steel housing protects drive axle and enclosed chain drive. Wishbone supports the skid plate . . . shields the radius rod and the engine crank case . . . and supports the oscillating steering axle.



KICK-OUT PAN on latest-model Dumptor is ½" abrasion-resisting steel plate. Pan has free-swinging kick-out action, breaks load suction when dumping wet, sticky materials. Or, pan bolts to Dumptor floor for extra protection when loading heavy, big-chunk rock.

1-SECOND GRAVITY DUMP . . . no slow-acting body hoists . . . no body-hoist maintenance . . . plus same speeds forward and reverse for no-turn shuttle hauling keep production yardage high, costs low with Dumptors.

CENTRAL CEMENT FEED

prevents gumming

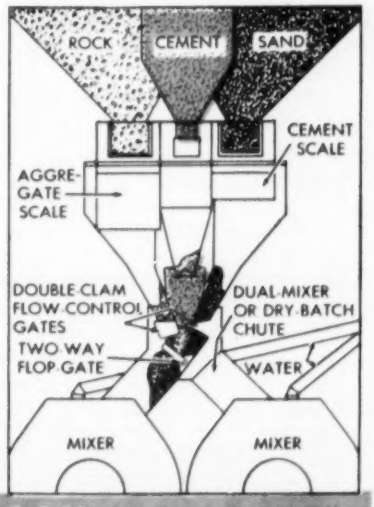
reduces dusting

pre-shrinks materials

Johnson Concentric Batcher provides these practical advantages for fast, economical weigh-batching of aggregates and cement:

- Concentric arrangement of aggregates around the cement batcher discharge gives central cement feed. This prevents "gumming", reduces dusting, pre-shrinks materials. All ingredients are intermingled as they flow through discharge.
- Cement, concrete's most expensive ingredient, is weighed individually on a precision-beam scale, in a separate batcher hung within the aggregate hopper.
- Adjustable rate of discharge on cement permits extremely accurate ribbon-feeding. Semi-automatic cement arrangement cuts off just ahead of final weight.
- Aggregates are weighed on accumulative dial scale, or on individual weigh-beam scales.
- Two-way discharge with dual chutes are available for charging 2 stationary mixers, or for charging into 1 stationary mixer and a truck-mixer, or dry-batch truck.
- Concentric Batcher sizes range from 2 to 8 cu. yds., and can be arranged for 2 to 8 aggregates — plus 1 to 4 types of cement. Choice of controls: fully automatic air-ram operated, semi-automatic, or manual, to best suit your needs.

Let your Johnson distributor show you all the other production advantages you will get with one of these patented Concentric Batchers in your plant. See him, or write to us.



22

(Koehring Subsidiary) **C. S. JOHNSON CO., CHAMPAIGN, ILL.**

CONCRETE PLANTS • BINS • RECEIVING HOPPERS • ELEVATORS • SILOS • BUCKETS

A UNIVERSAL production report to crushing plant operators

Plant Site	Herington, Kansas
Operators	Anderson-Oxandale
Requirements	High tonnage of aggregate to meet state's exacting specification. Frequent moves and changes in product specification required.
Equipment	Universal 3240 Impact Master. Universal portable screening and blending unit.
Type of rock	Dolomite limestone.
Production	Currently they are meeting a difficult specification calling for a large percentage of minus ¼ inch. They are producing up to 150 yards per hour of which 100% passes a one inch screen, 90% passes a ¾ inch screen, 50-60% passes a ¼ inch screen. When desired Anderson-Oxandale can reduce the production of minus ¼ inch material by at least 50%.

Anderson – Oxandale's portable 3240 Impact Master, crushing, screening, blending and loading plant operating near Herington, Kansas.

Anderson — Oxandale had to have a crushing plant that could be moved frequently with a minimum of down time, produce high tonnages of top-quality aggregate at each set-up, and meet exacting specifications. The Universal Impact Master (portable) with *Controlled Impact Action* combined with Universal's portable screening and blending unit was the answer.

The Impact Master, with *Controlled Impact Action* gives you four important advantages: (1) Greater control of the finished size of your material. (2) Cleaner, more cubical aggregate. (3) Lower operating cost — it requires less horsepower per ton. (4) Lower maintenance cost.

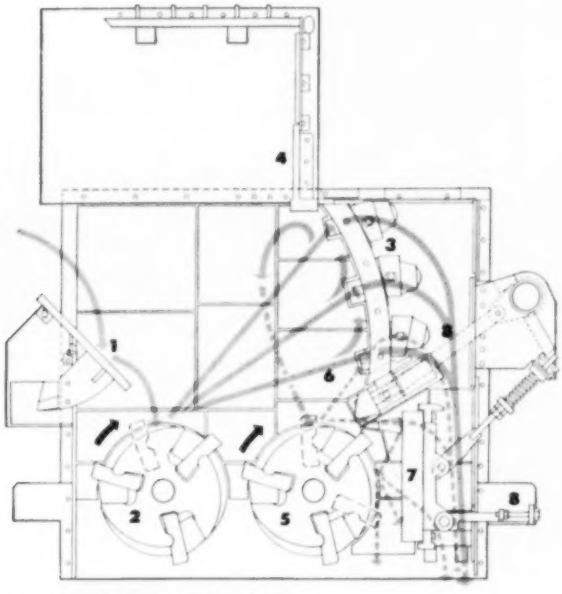
What Is Controlled Impact Action:

Control point 1: Controlled feed chutes the rock into the unobstructed path of the first rotor hammer circle for terrific impact, providing maximum unobstructed penetration. The angle of the plate can be quickly changed to handle rock of different size and density and meet varying quarry conditions. Incoming material penetrates the first rotor hammer circle at the correct angle for efficient breaking. **Control point 2:** you control the range of sizes by simply regulating the speed of the rotor hammers. **Control point 3:** you can easily adjust the stripper bar and lower screen grate to get the percentage of sizes you want.

With these three methods of control, you get what you want. It's no hit or miss proposition. "Controlled Impact Action" is more than a phrase with Universal. It's the key to the way all Universal Impact Masters produce more aggregate of higher quality to exact specification at lower cost.

Portable 3240 Impact Master with 3 speed transmission drive from diesel power mounted to the side. Slide mounted 36" x 16'-0" portable apron feeder. Eighteen inch closed circuit return conveyor from portable screening unit. 30" delivery conveyor to portable screening unit.

Universal portable screening and blending unit. All electric driven with 5' x 14' 3 deck inclined gyrating screen equipped with ball tray. Two 30" forward delivery conveyors and one 18" side delivery conveyor. Positive blending chutes with gates control different aggregate specifications. 18" return conveyor to Impact Master.



1. Adjustable feed plate
2. First rotor hammer
3. Deflector screen grate
4. Feed chute backplate
5. Second rotor hammer
6. Stripper bar
7. Bottom screen grate
8. Adjustments

How the Universal Impact Master works:

The diagram at left shows the flow of material. Adjustable feed (1) chutes the incoming rock into the first rotor hammer circle at proper angle. Rock is hit in motion, exploded into cubical shaped pieces by terrific impact of the rotor hammers, and at the same time hurled toward the deflector screen grate (3) where finished sizes are immediately discharged. Oversize particles are deflected upward, hit the feed chute back plate (4) and drop down into the path of the second rotor hammer circle (5) where they are reduced by impact and projected toward the bottom half of the deflector screen grate and the lower screen grate for immediate discharge. Both rotor hammers rotate toward the discharge opening. Material always flows rapidly in one direction. No grates, screens or bars obstruct the discharge opening. Large expansion chamber is also completely free of obstructions. All breaking is done by impact. There is no attrition, abrasive or grinding action. Thus wear is kept to a minimum.

More and more operators are turning to the Universal Impact Master, with "Controlled Impact Action." Its high production capacity, excellent performance, and simplicity of construction just naturally results in a more efficient, more profitable operation. Tonnages up to 750 tons per hour. Available in sizes: 3240, 3645, 4250 and 5260. Write for complete information today.

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue N.W. Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation,
4700 W. Division St. Chicago 51, Illinois

UNIVERSAL GAVE CEDAR RAPIDS ITS ORIGINAL FAME FOR QUALITY CRUSHERS **IN CEDAR RAPIDS SINCE 1906**

PMCP **UNIVERSAL**

SOMEDAY . . . *it will be for real!*

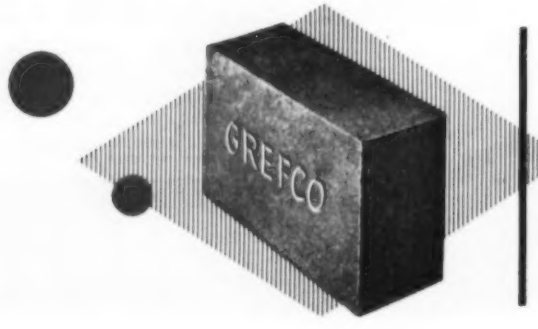
Building with blocks is as much a part of a young boy's life as baseball will be in his teens. Blocks—one on top of the other—to satisfy the typically male urge to create.

As the years roll by, this boy will go on to build bridges or buildings, to make his career in the laboratories of chemical research—or to watch steel being born from ore and earth.

Whatever his future, there will be refractory brick to help him do his job. Blocks of brick to line the furnaces and heat containing vessels—in virtually every step of industry.

There would be no processed raw materials, no production, no living such as we know it but for refractory products which Grefco furnishes in quality and quantity to keep the nation on the move.

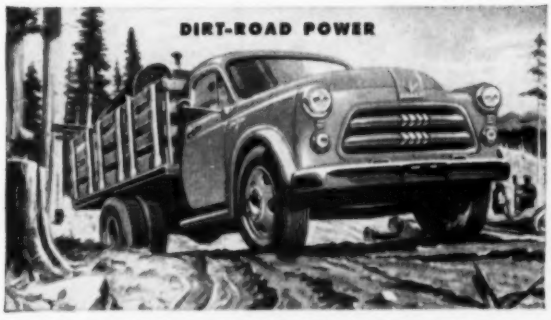
To the boy above, a very Merry Christmas and a great many Happy and Prosperous New Years. In his hands lies the future of America.



GENERAL REFRACTORIES COMPANY
Philadelphia

New Dodge "Job-Rated" Trucks...

New! Spectacular low-built lines with pick-up and panel floors as low as 22½ inches from the ground . . . knee-high for loading ease! Lower running boards for easier entry! Lower hood for greater visibility!



New! Great V-8's and thrifty 6's including the most powerful V-8's of all leading trucks . . . with revolutionary hemispherical combustion chamber! Available in 1½-, 2-, 2½-ton . . . standard on 2¾-, 3, 3½-ton!

with new low work-saving design...

New Steering system means easier handling . . . keeps Dodge ahead of the field with sharpest turning of any comparable trucks. More slant to steering wheel post. New power steering available in 4-ton models!

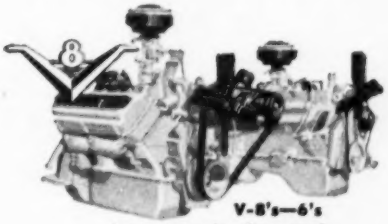
New! Full-vision luxury cabs with big one-piece windshield! More vision area than in any other leading make! New easy-chair seats! New cab sealing against dust, drafts! New two-tone interior styling!

help reduce your trucking costs!

New! Over 75 features! New, low, work-saving, time-saving design! New payload increases! New cab heating and ventilation! New styling from road to roof! New value leader models! New shorter conventional tractors, only 102 inches from front bumper to rear of the cab. New easy-shifting transmissions!

Free book on power! Explains the 3 basic kinds of engine efficiency . . . tells what they mean to you in power and economy! Get your free copy at your friendly Dodge dealer's! See him today!

New! Even greater values...yet still priced with the lowest!



V-8's—6's
2 great engine line-ups!

SEE YOUR FRIENDLY DODGE DEALER

NEW DODGE "Job-Rated" TRUCKS

THIS BARBER-GREENE CONVEYOR
BEGAN SAVING MONEY
BEFORE IT WENT TO WORK

Barber BG Greene

A fantastic claim? Not at all. Every Barber-Greene Model 76 Conveyor consists of pre-engineered, standardized units. You save in these important ways:

In design, because all this has already been done by Barber-Greene engineers—you don't need expensive, special engineering.

In assembly, because each component is accurately fabricated, factory aligned and clearly marked to save you time and money in erection. And, being completely standardized, B-G Conveyors can be lengthened, shortened or otherwise altered to meet new conditions.

But it is in performance that your savings are greatest because there is no more economical method of moving material than with a Barber-Greene Standardized Conveyor. Power costs are low—maintenance is minimum—production is constant. Why not take advantage of Barber-Greene's broad experience the next time you have a material handling problem.

IF YOU MOVE MATERIALS IN YOUR BUSINESS, IT WILL PAY YOU TO INVESTIGATE BARBER-GREENE STANDARDIZED CONVEYORS.

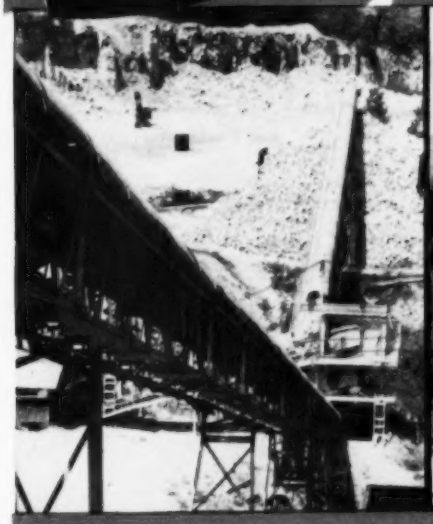
WRITE FOR CATALOG

A catalog, completely describing Barber Greene Pre-engineered, Standardized Conveyors, will be sent on request.

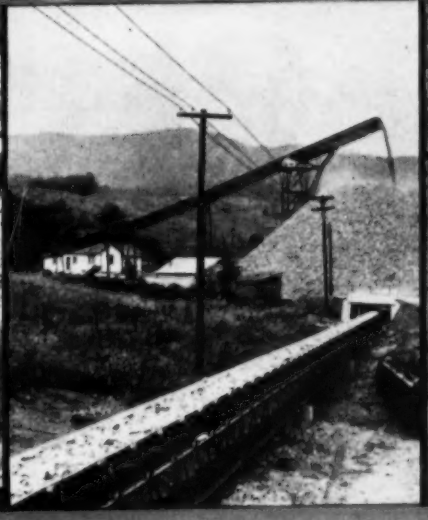
see your **B-G distributor** ...or write

look at this for flexibility

Here are typical material handling operations — all made possible with Barber-Greene Standardized Permanent Conveyors. Whatever the need — you'll move the material where you want it — more economically with a Barber-Greene.



A lime company in Ohio utilizes four B-G Conveyors working between the face of the lime deposit and the final product, bagged and ready to ship.



B-G Conveyor system replaces nearly a mile of railroad in this Virginia quarry. 20,000-ton surge pile permits operation of quarry independent of plant.

Earth filling a Pennsylvania dam. Stacker of B-G Conveyor system swivels 180° —permits scrapers and trucks to distribute one pile while other is being built.

B-G Conveyor doing radial stacking from screening plant. To charge truck batch bin, radial conveyor is quickly swung to fill bin—then returned to open stock pile.

Charging this Miami, Florida, concrete plant with a B-G Conveyor eliminates two cranes. Conveyor charges the plant while the Crane maintains the stock pile.

274

Barber-Greene

BG

Aurora, Illinois, U. S. A.

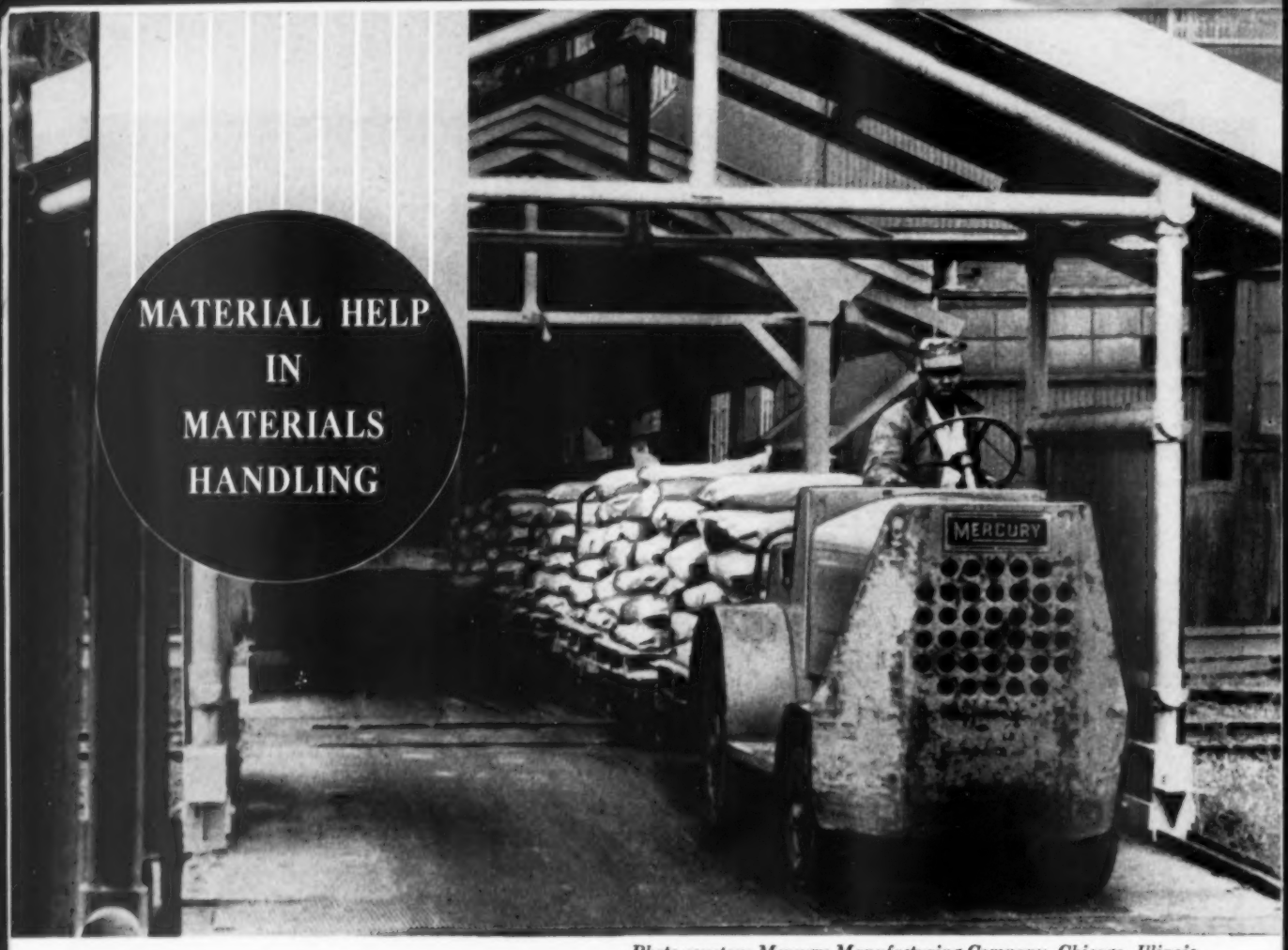
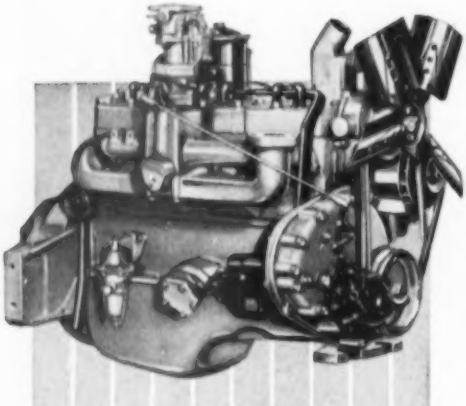


Photo courtesy Mercury Manufacturing Company, Chicago, Illinois

Pedigreed Power moves the products of industry . . . faster and at less cost



Every day is moving day in Industry. Raw materials, parts and finished products *must* move if supply is to meet demand. The system for moving materials in and around a modern industrial plant must be fast, economical and have the flexibility necessary to meet fast-changing requirements. Best solution is the modern towing tractor, small enough to scoot anywhere in the plant, powerful enough to pull loads heavier than itself.

Take the Mercury "Huskie" pictured here . . . it can pull a load of over 60 tons at a sustained speed of two and a quarter miles per hour. It can be equipped with snow plow, power-driven winch or sweeper-broom. Powering the "Huskie" is the six-cylinder, 251 cubic inch diaplacement Model 8 Chrysler Industrial Engine equipped with Chrysler four-speed transmission and velocity governor. Small, compact, with an amazing power-to-weight ratio, this engine is ideal for equipment requiring a light-weight, powerful engine.

Any Chrysler Industrial Engine, open or enclosed power unit, can be supplied with gasoline, natural or LP gas-burning carburetor, standard or gear-driven front ends (magneto or hydraulic pump drive), mechanical or velocity governor, standard, gyrol Fluid Coupling or torque converter transmission.

Remember, too, that Chrysler Power is not expensive. Production-line methods, adapted to specialized industrial engine building, provide a custom-built engine at mass-production prices. See a Chrysler Industrial Engine Dealer, or write: ***Dept: 1412, Industrial Engine Division, Chrysler Corp., Trenton, Mich.***

CHRYSLER
Industrial Engines

HORSEPOWER WITH A PEDIGREE

WHIRLCONE

THIS CHICAGO QUARRY CALLS IT "HOUDINI"

● At the Thornton quarry of Material Service Corp., Chicago, one of the largest commercial operations of its type in the world, Supt. Ed Schwartz calls the plant's 25-in. Cottrell Whirlcone separator "Houdini"!

● This is because of its magical recovery of clean fines from the log-washer overflows.

● Mounted on a 25-ft. tower, the single rubber-lined Whirlcone extracts from 9 to 10 tons (dry weight) of clean limestone sand per hour, removing 99.8 per cent of the objectionable clay and silt. More than 90 per cent of the recovered fines are in the minus-50-mesh range.

● Since 1949, hundreds of sand and gravel operators have installed Cottrell Whirlcones for the low-cost recovery of valuable fine sands formerly lost in classifier wastes. They have found that a Whirlcone quickly pays for itself in tonnage saved alone — to say nothing of its miraculous ability to put back the extremely fine fractions needed to produce sand that will meet today's strict specifications.

● Ask for the name and location of an installation near you.

A few exclusive sales territories are still open. Qualified dealers may write the manufacturer — Cottrell Engineering Co. — for details.

COTTRELL
ENGINEERING CO.

322 SOUTH AVENUE 17
LOS ANGELES 31, CALIF.

STOP WASTING MONEY BY THE TRUCKLOAD

Go White!

YOU NEED the most efficient kind of trucks for today's schedules . . . today's operating costs . . . today's work conditions.

That's why you see so many Whites these days in excavating service and dump operations.

Tailored to the exact needs of your work, Whites have the power and the rugged reliability to get more work done . . . in less time . . . at lower cost.

Find out how Whites save money in *your* kind of business.

THE WHITE MOTOR COMPANY • *Cleveland 1, Ohio*

For more than 50 years the greatest name in trucks

White

Check these White advantages . . .

- √ WIDE RANGE of models to meet every excavating operation—4 and 6-wheel trucks and tractors for end or side dump.
- √ SINGLE drive axle units with single or double reduction or two-speed axles.
- √ TANDEM drive units with double reduction axles.
- √ WHEELBASES as required. Heavy duty springs, front shock absorbers, rock-lug tires and other special units available as required.
- √ ENGINES—gasoline or diesel-powered.
- √ TRANSMISSIONS—various transmissions and auxiliary transmissions to meet local operating conditions.

Our house? Built with wire rope?

Not only yours, Mr. Brown, but millions of others too.

A miracle of the postwar years has been the construction of more than 7-million new dwelling units. Accomplishment of this tremendous task has called for "muscles of steel"—rugged wire rope that is a vital factor in mining the ore, quarrying the stone and bringing out the timber that comprise the basic components of every house and building—large or small.

Supplying these "muscles of steel" to the giant that is American industry is our big job here at Wickwire—a job we've been doing well for over half a century.

In the mines . . . the quarries . . . the logging camps—and wherever wire rope is used, they'll tell you that for utmost safety, longer life and most economical service you can always count on the quality and strength that is built into Wickwire Rope.

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver
Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland
Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga
Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

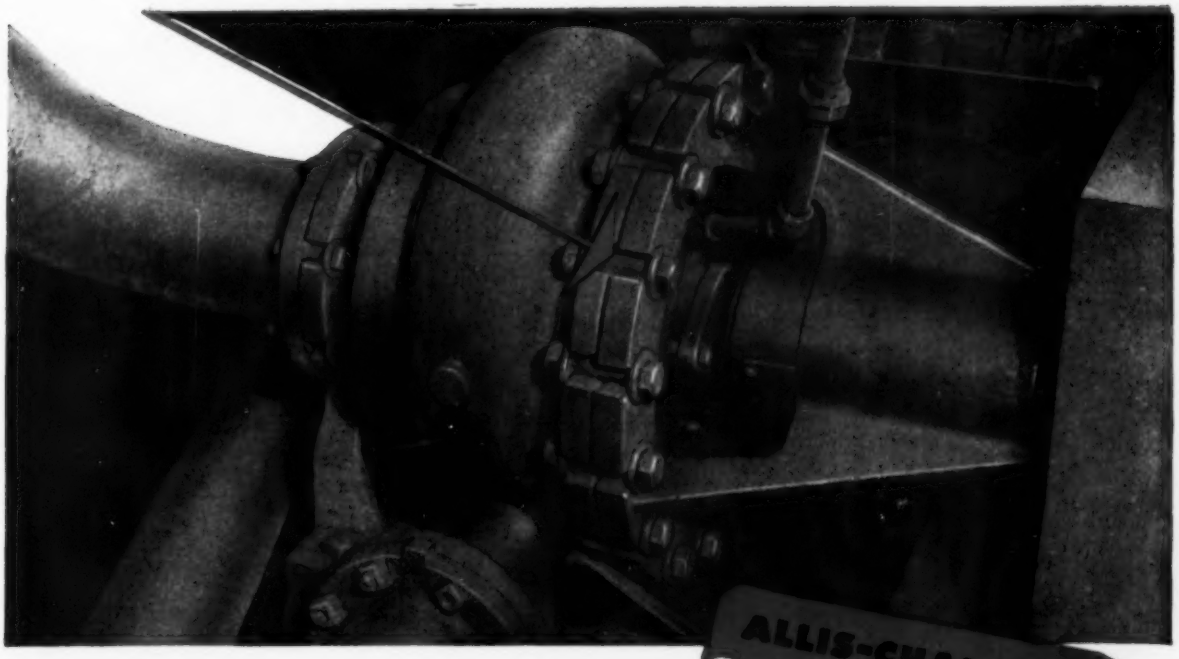
WICKWIRE ROPE
CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1873

SINCE 1856
HUMBOLDT
Mines Equipment, Mineral Dressing Plants, Crushing and Grinding Machinery, Cement Factories, Metallurgical Works, Coal Preparation Plants, Steel Constructions for Buildings and Bridges.
SINCE 1864
DEUTZ
Otto-, Gas-, Diesel-Engines for Every Purpose of Two- and Four-Stroke design, Output range 3-1650 H.P. Cooled by water or air, Diesel-powered tractors, Diesel locomotives, Gas producer plants.
SINCE 1864
MAGIRUS
Trucks and busses driven by air-cooled DEUTZ Diesel engines, Vehicles for municipal services, Fire ladders, fire engines, Fire fighting water trucks, Two-wheeled ladders, Fire fighting equipment.
KLÖCKNER-HUMBOLDT-DEUTZ AG · KÖLN

KLÖCKNER - HUMBOLDT - DEUTZ A.G. **KÖLN - DEUTZ, GERMANY**

Here's a Pump That Maintenance Men Like



ALLIS-CHALMERS Solids Handling PUMP

- **All maintenance points are easy to reach**
- **Pump can be taken down and returned to service in less than a half hour**
- **Many parts are interchangeable between different pump sizes**

THE Allis-Chalmers solids handling pump is ruggedly built to stand rough solids handling service. And it's easy to work on. Notice how accessible the packing gland is. See how the casing bolts are arranged. Just loosen the nuts a couple of turns and the bolts lift out.

Wearing parts separate into easily handled units. In fact, one man can tear down an Allis-Chalmers solids handling pump, replace a part and have it back in action again *in less than a half hour*. Piping need not be disturbed unless the casing is replaced.

Complete Pumping Unit Furnished . . . Allis-Chalmers can furnish the complete pumping unit — pump, motor, *Texrope* drive and control — assembled and ready to install and run. A *Vari-Pitch* V-belt drive makes it possible to vary head and capacity at the turn of a crank.

Get the Complete Story . . . Every Allis-Chalmers solids handling pump is application engineered by a specialist who knows solids handling equipment problems and how to solve them. Your nearby Allis-Chalmers representative will be glad to give you complete facts and figures on CW pump performance. Or write Allis-Chalmers, Milwaukee 1, Wisconsin and ask for Bulletin 52B6381.

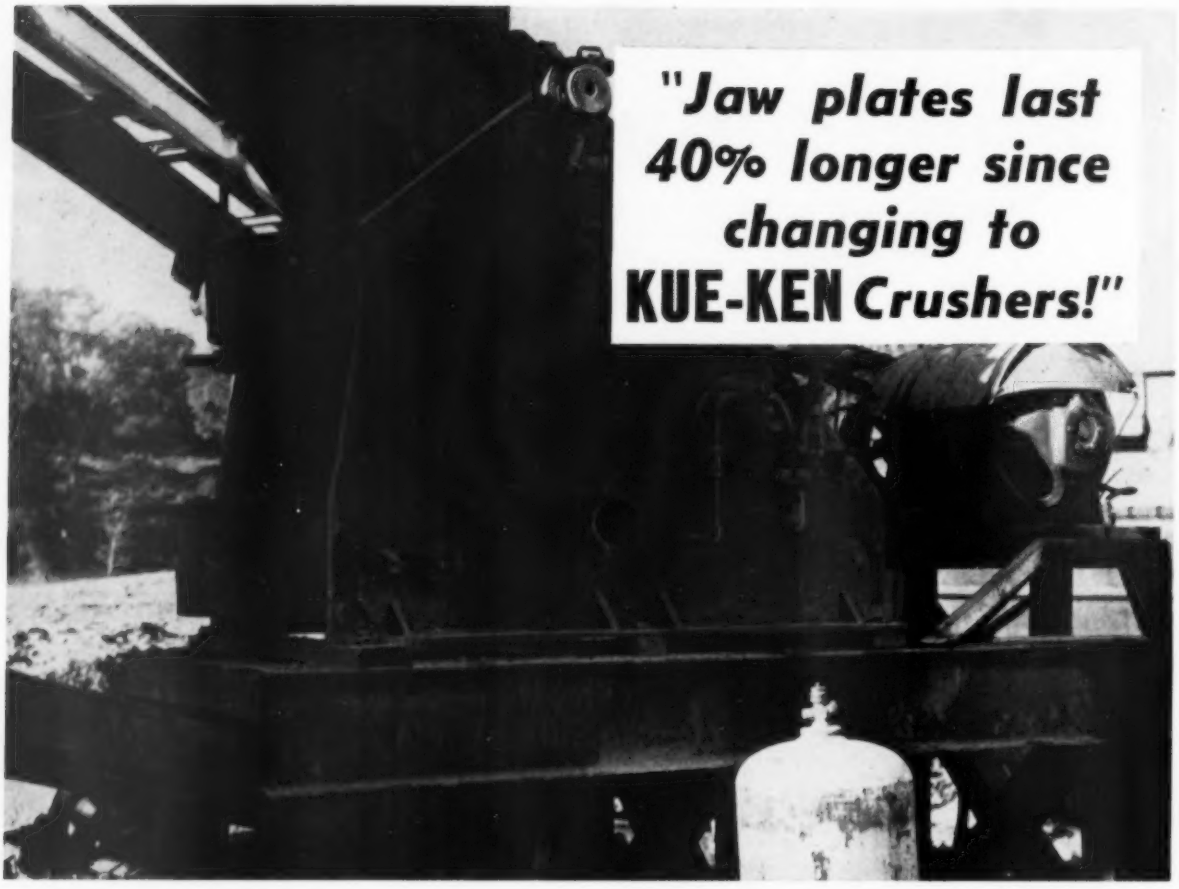
A-4137

NOW . . . even longer wear

Impeller and suction plate now made of *Ni-Hard* alloy at no extra cost. You get longer wear, lower pumping costs.

Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS



"Jaw plates last 40% longer since changing to KUE-KEN Crushers!"

Hard river gravel is especially rough on jaw plates as any operator knows. A California aggregate company* producing crushed gravel, aggregate and ready-mix with 10″x36″ overhead eccentric type crushers used several sets of jaw plates a year. To cut this heavy expense they switched to their first KUE-KEN . . . the crusher that "crushes without rubbing." Immediately their savings mounted . . . jaw plates lasted 40% longer, capacity per inch of jaw width jumped 20%, power consumption dropped 20%!

The outstanding results from this first KUE-KEN led to the purchase of the 30″x12″ KUE-KEN pictured above. It has been in operation for several years. Recently they installed a 36″x10″ . . . their third!

Here is but one of many examples of user satisfaction expressed in repeat orders. We suggest that you investigate Kue-Ken today . . . crushers for every need.

***Name furnished on request.**

Write for Descriptive Folder

KUE-KEN pronounced "QUE-KEN"
U. S. and foreign patents pending

DEALERS: LUND MACHINERY CO., Salt Lake City, Utah; CLOSNER EQUIPMENT CO., San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO., Seattle, Wash.; CONSTRUCTION EQUIPMENT CO., Spokane, Wash.; CONTRACTORS EQUIPMENT CO., Portland, Ore.; MILLER MACHINERY CO., Missoula, Mont.; ANAHUAC MACHINERY CO., Mexico City, Mexico; UNIVERSAL EQUIPMENT CO., Vancouver, B. C.

643 CHESTNUT • OAKLAND 20, CALIF.

STRAUB MFG. CO.

Kue-Ken Jaw Crushers	Revolving Screens	Rib Cone Ball Mills
Kue-Ken Gyracone Crushers	Classifiers	Concentrating Tables
Overhead Eccentric Crushers	Feeders	Vibrating Screens

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor. Broad and Arch Streets, Philadelphia, Penn.

Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd. Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne, England.

Crane rental company **increases safety** with these

Improved Tiger Brand Boom Supports

The new Tiger Brand Boom Supports on this 25-ton Cranemobile can be inspected visually, because there are no sockets to hide part of the rope. What's more, interwoven ends distribute vibration over a longer part of the rope—keep these improved boom supports in safe operating condition 2 to 3 times longer.

Last year, Lee Crane Service, Inc., Boston, Mass., added an extra measure of safety to every one of its 14 truck cranes. It removed apparently sound—but potentially dangerous—boom supports equipped with ordinary zinced sockets and installed new Tiger Brand Boom Supports.

Visual inspection now possible

Here are the reasons for this change, as told by Mr. Joseph Veanor, owner of Lee Crane Service: "Easy *visual* inspection is the reason we switched to Tiger Brand Pendants. With the old zinced-socket type, we could never be positive that a pendant was completely safe because the sockets hid part of the rope.

"These Tiger Brand Pendants completely eliminate the use of sockets. As a result, we can see and inspect *every* part of the rope. If any wires are broken, we can replace the pendant before a failure occurs. In that way, we can be sure that every one of our booms is completely safe."

Last 2 to 3 times longer

Tiger Brand Boom Supports last longer than the old-fashioned socket type, because each end of the wire rope is tightly and permanently interwoven. This spreads strain and vibration over a much longer section of the rope, instead of concentrating all the strain right at the socket. As a result they last 2 to 3 times longer than other types.

Easily installed

Lee Crane Service had no trouble converting to these modern Tiger Brand Boom Supports. All fittings are standard size, so no alteration of equipment was required.

Send the coupon for more information on these improved boom supports. Or get in touch with our nearest sales office.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE USS *Excellay Preformed*

American Steel & Wire
Rockefeller Building
Cleveland 13, Ohio

Please send my free copy of your descriptive folder on Tiger Brand Wire Rope Boom Support Assemblies.

Name.....

Company.....

Address.....

City.....Zone....State.....

UNITED STATES STEEL

• Largest Pulverizer in

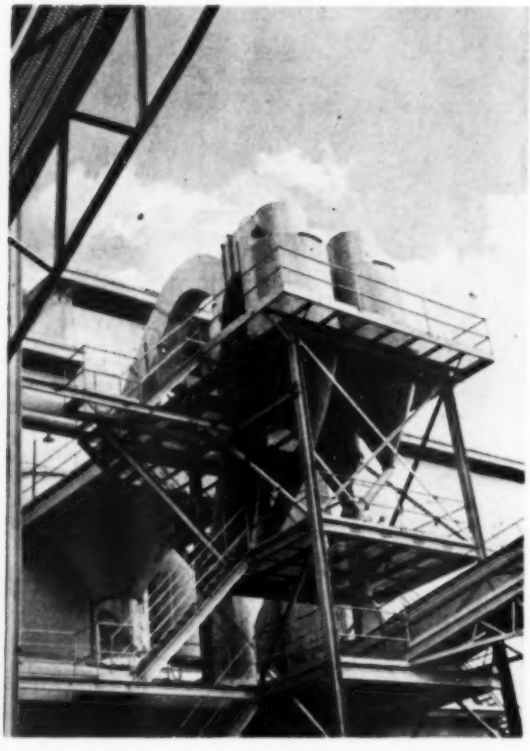
. . . Doubles Production for Pierce, Florida Plant

To meet a large increase in demand for ground phosphate, The American Agricultural Chemical Co. found it necessary to double the grinding facilities of their Pierce, Fla. operations. After a careful study of available systems, the Kennedy Air Swept Ball Mill System was chosen as the one best suited to grind pebble, concentrate, or a combination of both at the lowest cost. Dependability, continuity of operation, low power, maintenance, and operating labor costs were the prime factors in their decision.

The ball mill has long been used in many industries where continuous production with minimum maintenance and operating supervision is required to keep production costs to an absolute minimum. The simplicity of the ball mill, both in design and operation, makes it the ideal pulverizer.

The Kennedy-Van Saun Air Swept Ball Mill Grinding System is the ultimate in Ball Mill Systems. The Kennedy Radial Flow classifier makes possible production of a wide range of product sizes, by positive external adjustments, to a high degree of accuracy.

The American Agricultural Chemical Co. Grinding Plant — Pierce, Fla.



Kennedy-Van Saun 11′ Radial Flow Classifier and Cyclone collectors.

KENNEDY - VAN SAUN
MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVENUE, NEW YORK
FACTORY DANVILLE, PA.

IT COSTS LESS.. TO OWN THE BEST!

Florida Phosphate Field

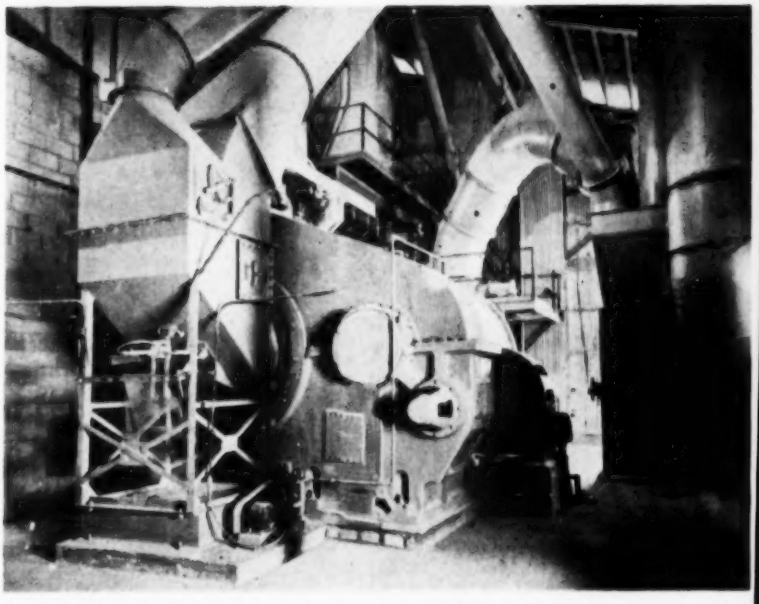
of The American Agricultural Chemical Co.!

OUTSTANDING FEATURES

- ***Lower Maintenance***

  Tramp iron, manganese, and other foreign material cannot damage system. *No magnetic separation required.*

  Grinding balls added while mill is in operation, maintaining constant level of grinding media. Production and fineness remain constant, month after month. No periodic shut-down for lubrication or replacement of wearing parts. Years of operation assured before parts (other than grinding balls) require replacement.



Kennedy-Van Saun 10′ x 15′ Integral Gear Drive Air Swept Ball Tube Mill and #93 Exhauster Fan.

- ***Minimum Power***

- ***Lower Operating Cost***

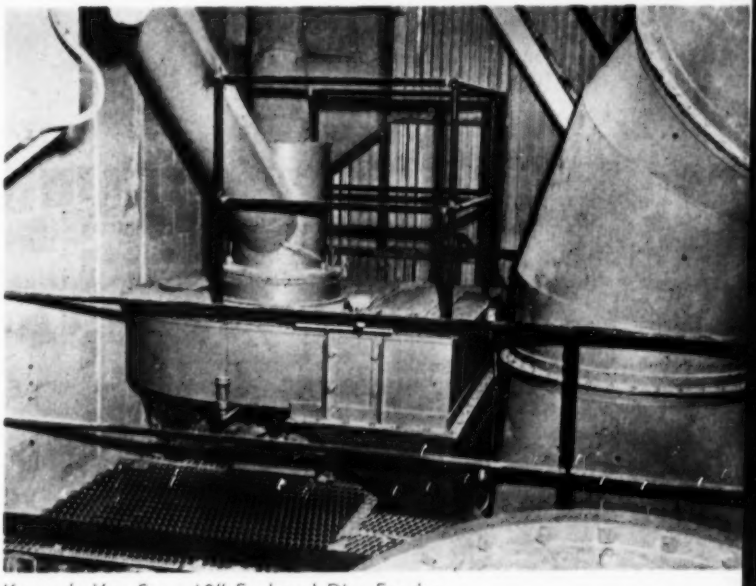
  Dependability of equipment and reliable automatic feed control assure high production with minimum operating personnel.

- ***Higher Production***

  Single grinding unit capacities to 75 tons per hour, requiring less floor space and structural work per ton of production.

- ***Flexibility of Design***

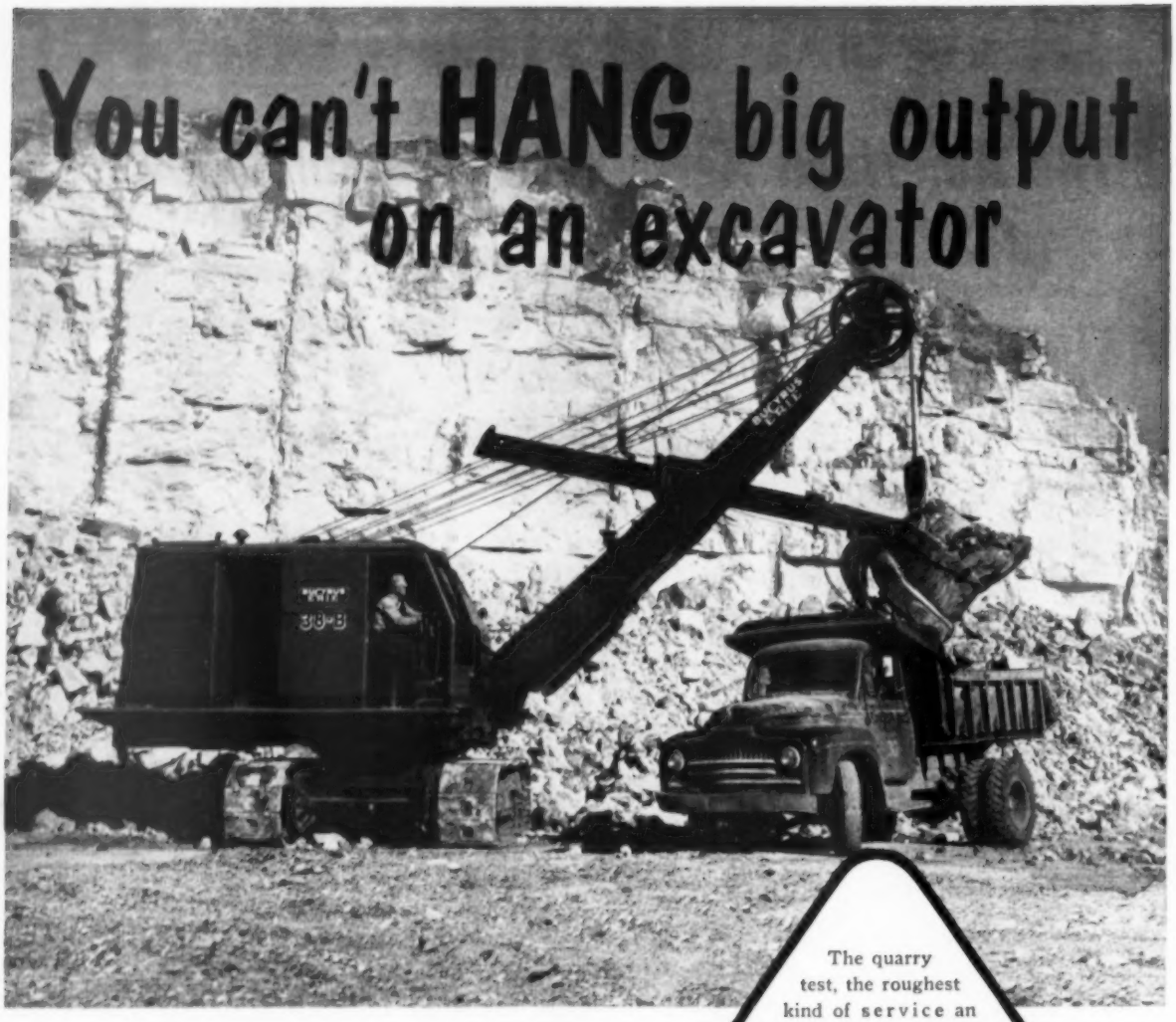
  Kennedy-Van Saun Air Swept Ball Mill Grinding Systems available in a wide range of capacities to meet your requirements.



Kennedy-Van Saun 60″ Enclosed Disc Feeder

SEND FOR ILLUSTRATED LITERATURE DESCRIBING K.V.S. MACHINERY AND EQUIPMENT

You can't HANG big output on an excavator



The quarry test, the roughest kind of service an excavator can get, proves Bucyrus-Erie quality. See your Bucyrus-Erie distributor for the complete story on *individual design*.

BUCYRUS ERIE

To get the most work out of your excavator, every piece of machinery from treads to boom point sheaves must carry a proper share of the load. When any part is underworked or overworked, decreased performance results.

If you try to increase output by attaching a bigger dipper and more counterweight, the engine is going to sweat and strain under the load. Leaving dipper capacity as is and increasing horsepower with a bigger engine won't help either because shafts, drums, clutches and brakes will wear out quickly and fail.

Big output must be built into your machine at the start. That's why Bucyrus-Erie individual design counts so much. Power, speed, strength and weight are exactly proportioned for peak efficiency in a specific work range. There's top performance right down the line — fast smooth cycle, simple and easy operation, low fuel consumption, exceptional savings on maintenance and wear. 44E53

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2. ONLY SPECIALLY SELECTED STEELS

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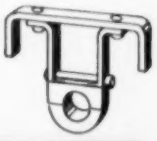
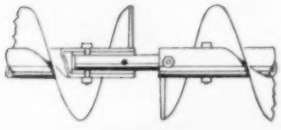
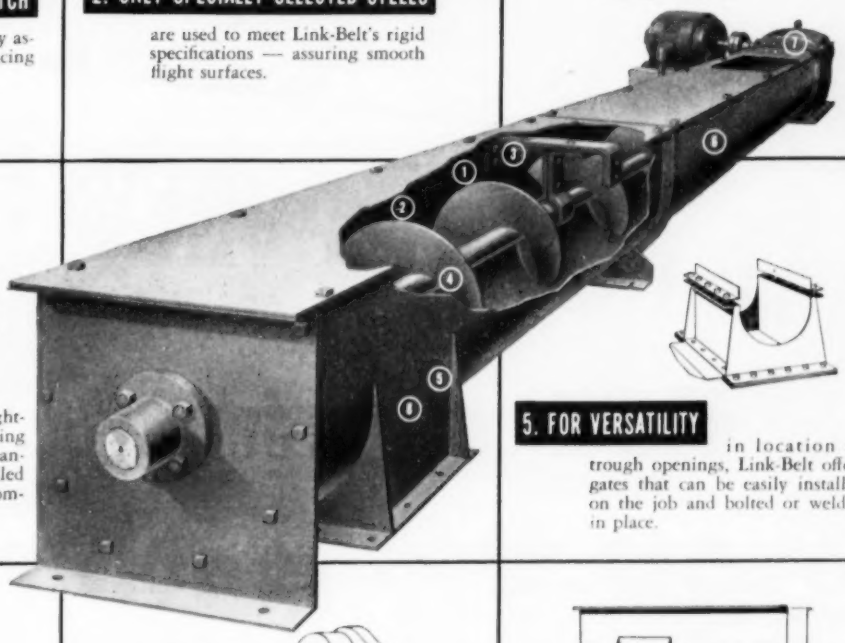


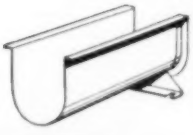
3. HERE'S A WIDE RANGE of hanger styles and mountings with various bearing materials.



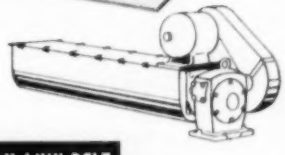
4. FOR YOUR PROTECTION straightness is checked before shipping and extra care is taken in handling and loading. Jig-drilled coupling bolt holes assure complete and easy assembly.



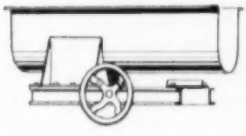
5. FOR VERSATILITY in location of trough openings, Link-Belt offers gates that can be easily installed on the job and bolted or welded in place.



6. YOU'LL DISCOVER that troughs are accurately fabricated to assure better fit of all components. Link-Belt offers a choice of metals to fit your particular application.



7. ONLY LINK-BELT builds a complete integrated line of gear and chain drives, couplings, bearings. One proved source . . . one undivided responsibility.



8. YOUR CHOICE of fixed or detachable plain discharge spouts or gates. Flat or curved slide type gates can be hand or rack-and-pinion operated.

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SCREW CONVEYORS

These are only a few of the many important differences in screw conveyors. Ask your Link-Belt sales representative or distributor for new 92-page Data Book 2289.

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7 out of every 10

are repeat orders

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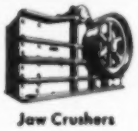
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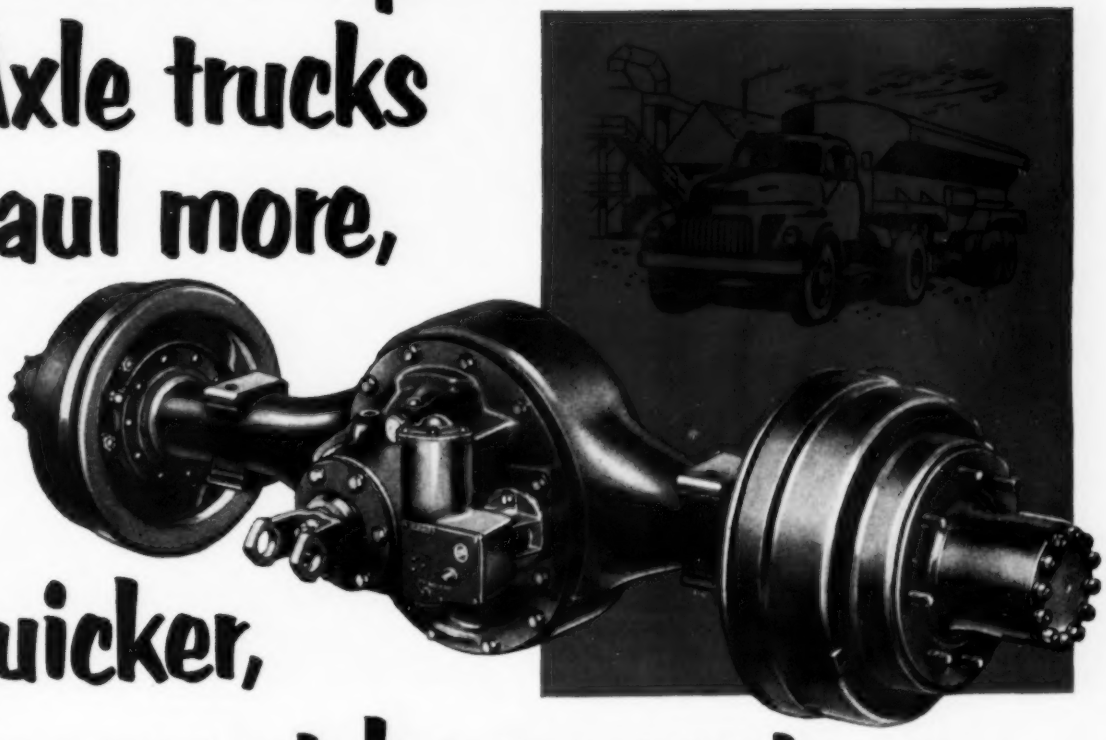

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*More than a million-and-a-half Eaton 2-Speeds in trucks today! For complete information, see your truck dealer.

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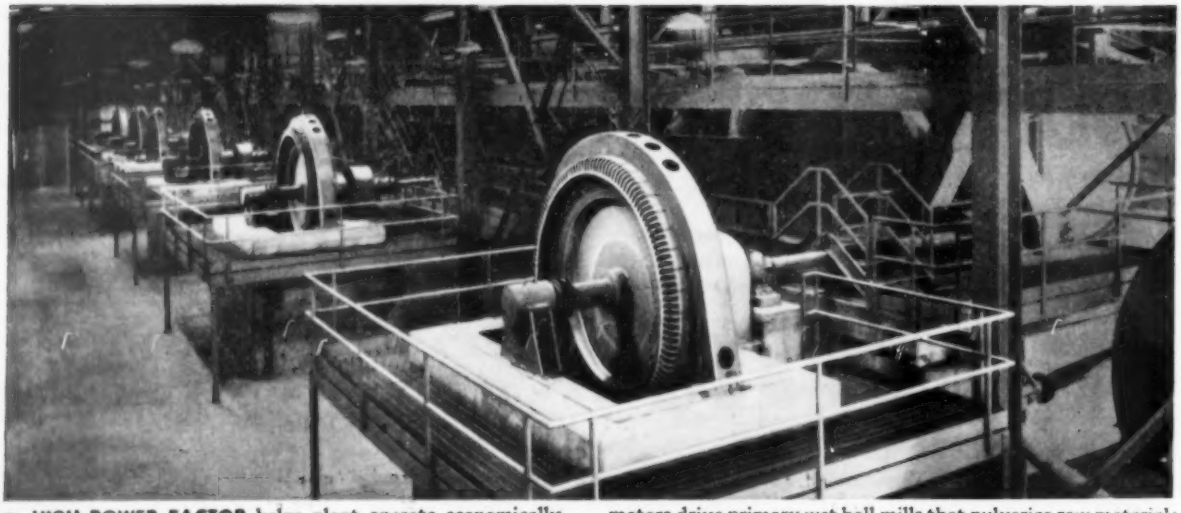
GE ENGINEERING REPORTS:

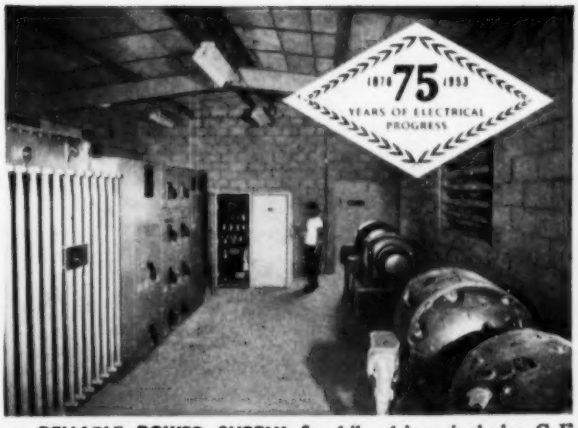
1 ON-THE-SPOT SEPARATION is done on this barge, which floats in a man-made pond near the Bunnell plant. Walking dragline (in background) dumps sand containing coquina shell into bins. These are five of twelve totally enclosed fan-cooled G-E Tri-Clad® gear-motors that keep conveyor loads moving to the screening process—in this corrosive atmosphere.

Lehigh Portland Cement Company's



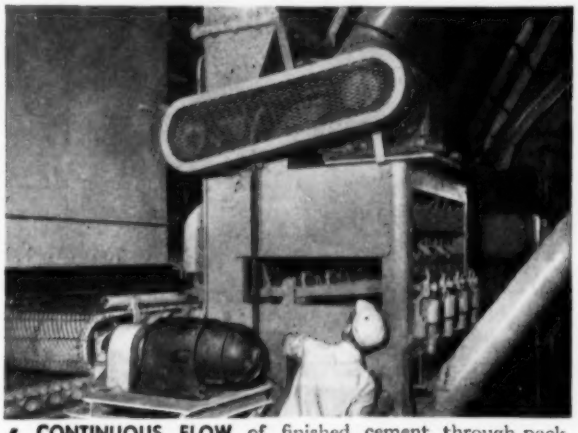
2 HIGH POWER FACTOR helps plant operate economically. Three of these 700-hp, 180-rpm, 4000-volt synchronous motors drive primary wet ball mills that pulverize raw material; three others grind cement clinker after burning.

3 **KILN-SPEED CONTROL** over wide range is made possible by G-E adjustable-voltage d-c drives. Each kiln uses a 125-hp motor, and an electrically co-ordinated feeder motor.



4 **RELIABLE POWER SUPPLY** for kiln drives includes G-E 1000-kva load-center substation, two G-E synchronous m-g sets, and a-c and d-c control (background).

5 **DEPENDABLE POWER-SWITCHING** is provided by 4160-v metal-clad switchgear in a pressure-ventilated room. Vertical-lift design means you *see* when breaker is disconnected.



6 **CONTINUOUS FLOW** of finished cement through packhouse is aided by this G-E Tri-Clad motor driving bagging machine, and gear-motor driving conveyor for bagged cement.

*Reg. trade-mark of General Electric Company

new plant powered by G-E system

G-E drives help maintain fast, smooth output of coquina-shell Portland cement

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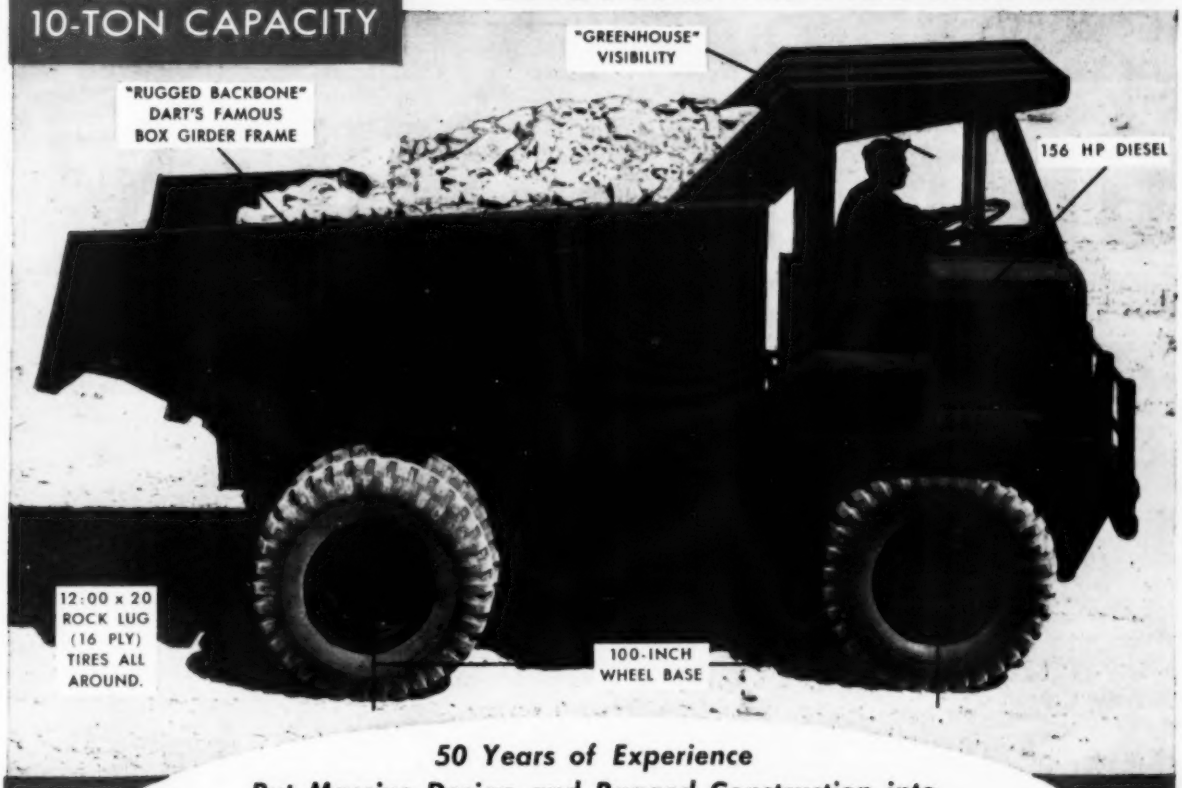
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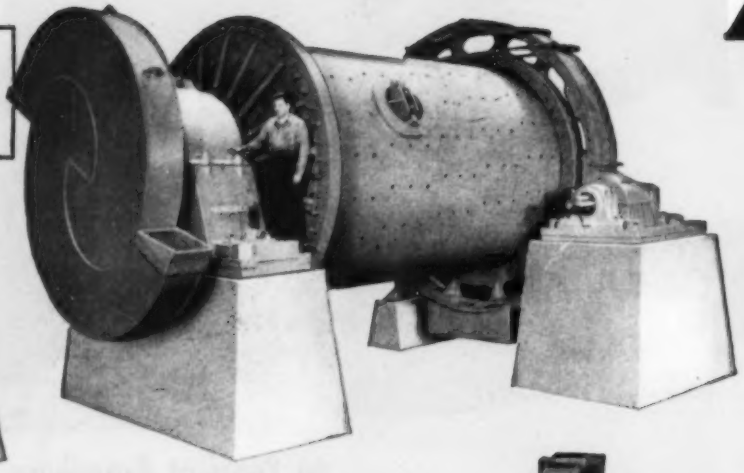
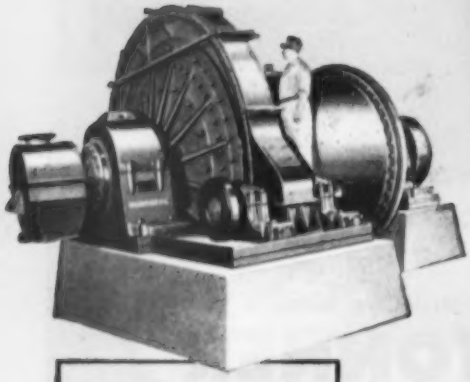
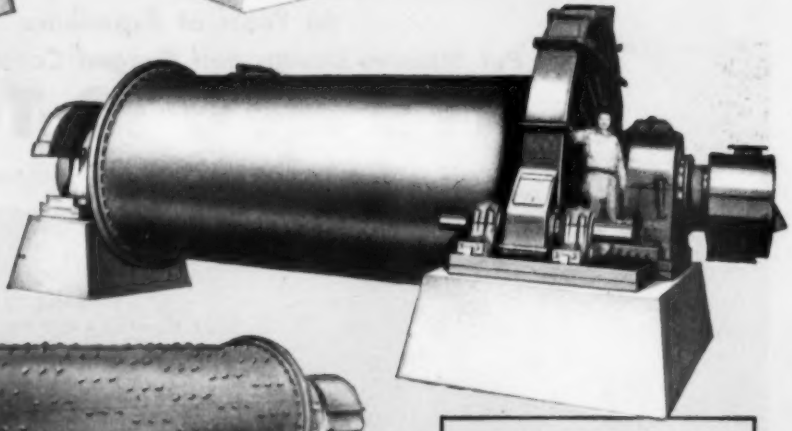
NORDBERG GRINDING MILLS



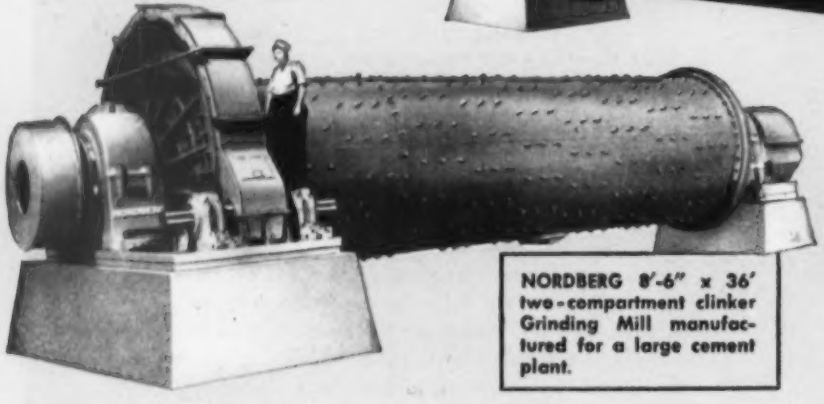
NORDBERG 10′-8″ x 17′ Wet Grinding Mill showing scoop feeder.



NORDBERG 9′-6″ diameter x 11′ long Dry Grinding Mill.



NORDBERG 9′-6″ x 24′ Wet Grinding Pebble Mill for non-ferrous milling.



NORDBERG 8′-6″ x 36′ two-compartment clinker Grinding Mill manufactured for a large cement plant.

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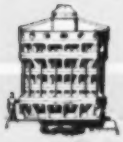
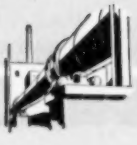
NORDBERG 9′-6″ x 32′ two-compartment Ball Mill enroute to a large Missouri cement plant.

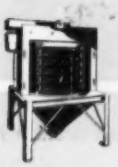


SYMONS GYRATORY CRUSHERS

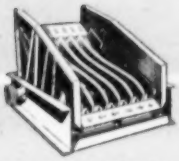
SYMONS CONE CRUSHERS



ROTARY KILNS and COOLERS



SYMONS "V" SCREENS



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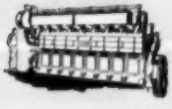

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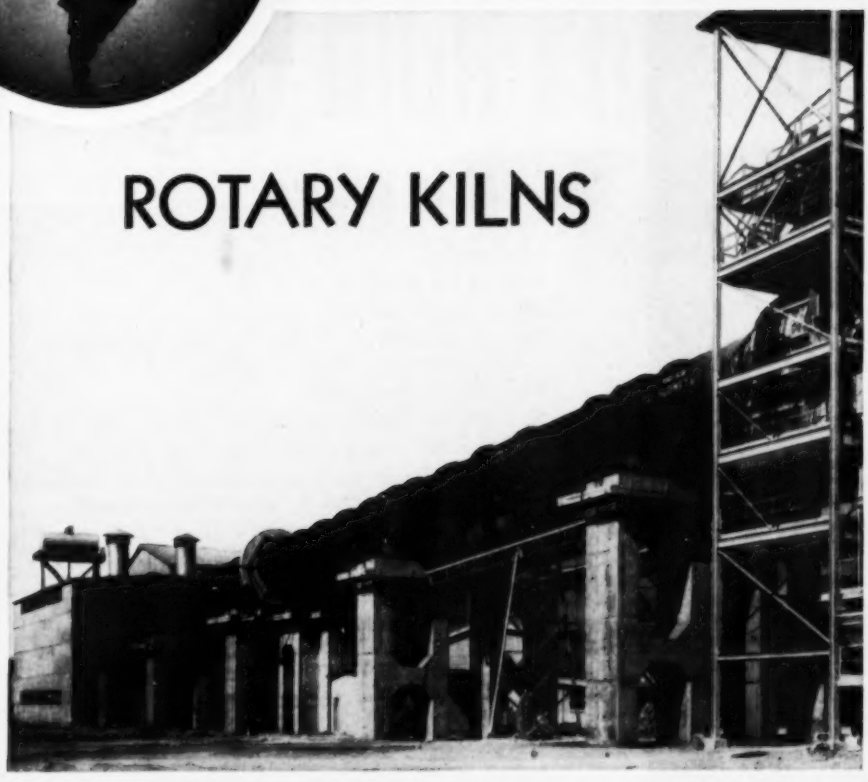

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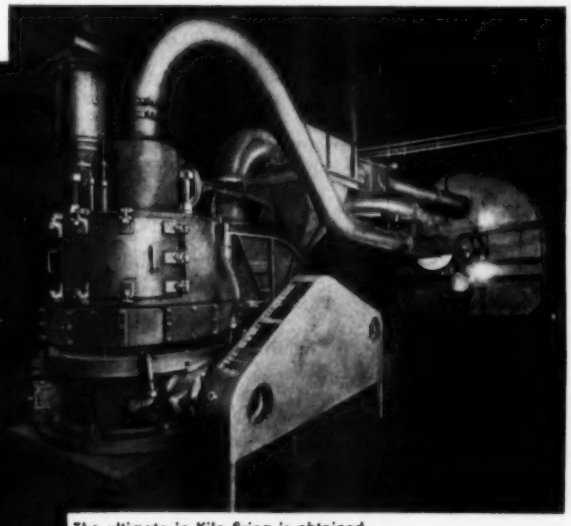

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Extensive, continuing B&W research findings plus the experience accumulated over many years of manufacture and application, are incorporated in the design and rugged construction of the B&W Type E Pulverizer . . . assure that it more than meets every requirement for efficient and economical firing in modern kiln-operating practice. The Babcock & Wilcox Company, Boiler Div., Process Equipment Dept., 161 East 42nd St., New York 17, N. Y.

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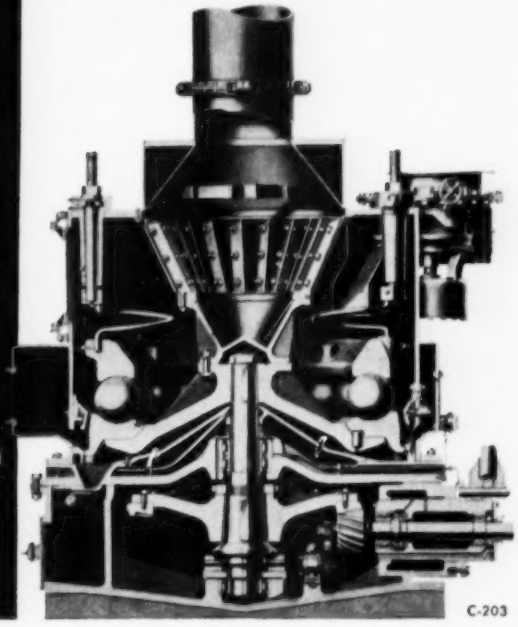


C-203

editorial

Attend Your Industry's Convention!

ONLY a few weeks away are the most important conventions of 1954 for several of the major nonmetallic minerals industries, including crushed stone, agricultural limestone, and sand and gravel and the related ready-mixed concrete and concrete block industries. Several of these industries are also holding their biennial machinery exhibitions, which will be bigger and better than ever before. Only general information is available at this time on the programs for these meetings, but it is safe to say that they will equal or exceed the high standards set in previous years. All subjects important to producers in these fields will be thoroughly discussed by authorities from inside and outside these industries. As usual, excellent programs of entertainment are being arranged for the producers attending the meetings, and for the ladies.

The important conventions ahead, in the order in which they will be held, are as follows: The National Concrete Masonry Association, Shoreham Hotel, Washington, D. C., February 9-11, 1954; the National Sand and Gravel Association and the National Ready Mixed Concrete Association (with a joint machinery exhibition), Conrad Hilton Hotel, Chicago, February 15-19, 1954; the National Agricultural Limestone Institute, Blackstone Hotel, Chicago, February 19-20, 1954; the National Crushed Stone Association (with concurrent machinery exhibition), Conrad Hilton Hotel, Chicago, February 22-24, 1954. All producers and manufacturers of these materials, whether or not they are members of the associations, are invited to attend these meetings, except in the case of N. C. M. A., where attendance is limited to members and invited guests.

ADVANCE registrations forecast record-breaking attendance at all these conventions, due undoubtedly in part to the rapid growth in the membership of the associations. This trend in recent years indicates a growing awareness by producers of the importance of industry associations to them and to their industries. Governmental, legal, labor and related matters affecting producers are becoming so complex and are changing so rapidly that it is impossible for the average producer to keep up with them and also run his business. An alert and aggressive association can do for producing companies many things they cannot do for themselves, and can also help to solve many of the innumerable problems confronting them.

The passing of the boom period, with the resultant growing need for competitive selling and for more efficient and economical production, is also expected to help swell attendance at the conventions. Exhibits put on in connection with some meetings will be stronger inducements than in any recent years, for the same reasons. The central location of the meetings to be held in Chicago always helps to swell their attendance.

THE programs for most of these conventions are not yet available, but from the information available, we can assure producers that all the most timely and important subjects affecting them will be discussed by the best authorities on these subjects. The speakers will include top association executives and technical directors; government bureau heads; research, legal, and business experts; top-flight producers; and others of equal caliber. The latest available authoritative information will be presented on business conditions and future prospects; government actions and regulations, including percentage depletion; legal matters; equipment, material, labor and car supply; methods of operation; specifications; costs; prices, etc.

Open forums and panel sessions on various subjects have been so popular at these conventions that they have become established features. This is especially true of the forums on operating problems, which are always well attended and interesting. These forums and panel sessions are open to everyone; they are informal, friendly affairs in which the discussions are guided by experts in their fields, but in which anyone can participate. In some cases the problems discussed are selected by a preconvention mail polling of association members to insure that the problems affecting the most people are given adequate attention. At most of these sessions, also, representatives of machinery manufacturers are invited to participate.

THE machinery exhibitions to be held in conjunction with the sand and gravel, ready-mixed concrete and crushed stone conventions will be far larger than ever before. More exhibit space has been made available by the Conrad Hilton Hotel, with the result that many individual exhibits will be more extensive, and more and larger machines will be exhibited. As of October 7, the number of exhibitors for the combined N. S. G. A.-N. R. M. C. A. show had reached a total of 90, far above the previous record total of the last show in 1952. The latest total for the N. C. S. A. show indicates that it will also exceed the 1952 record figure.

Each participating company promises to have a more nearly complete exhibit than ever before, including full-size operating units wherever possible. Each company will also have its best engineering and sales talent present to serve the record crowds of producers who will attend the shows. Although the other associations — the N. C. M. A. and the N. A. L. I. — will not have exhibits, there will be large representations of machinery men.

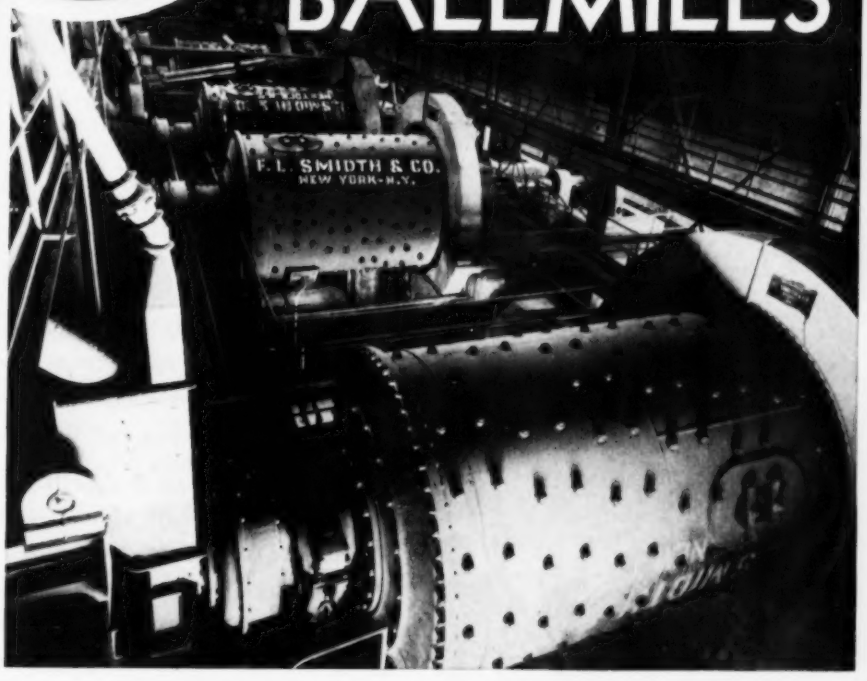
THE complete official programs of the conventions of the N S. G. A. and N. R. M. C. A., the N. A. L. I., and the N.C.S.A., will all be published in the January Annual Review and Forecast Number of PIT AND QUARRY, together with layouts of the machinery exhibits which will be keyed with lists of the exhibitors to identify their locations.

Attendance at the annual convention of the association covering your industry is a must, whether or not you are now a member. You can't afford to stay away. If you have not already made your hotel reservation, do so at once.

Walter E. Trauffer

SMIDTH

BALLMILLS



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news of the industry

PIT AND QUARRY

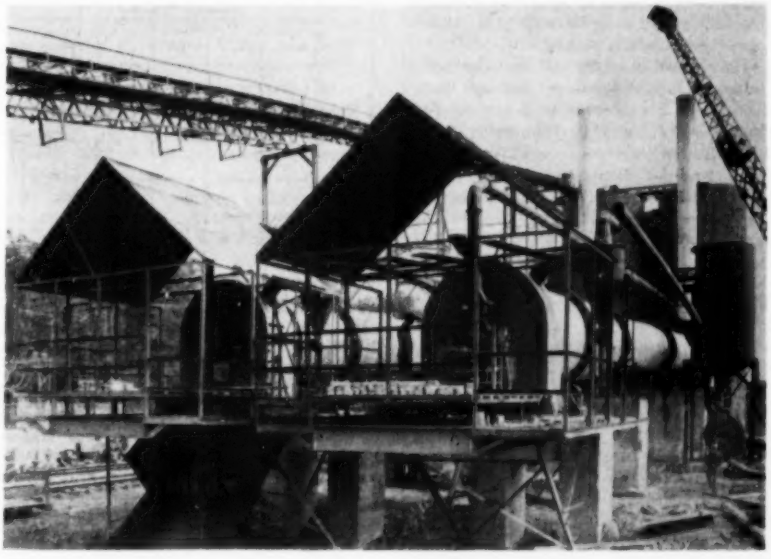
Carolina Solite Corp. Opens $1,000,000 Plant On 7-Day-Week Schedule

Carolina Solite Corporation's new plant in Aquadale, N. C., recently went on a full seven-day-a-week operation schedule, according to John W. Roberts, president.

Construction on this new million-dollar plant began last spring, bringing a new industry—the first of its kind—to North Carolina. The plant will help supply the increasing demand for Solite, a controlled lightweight aggregate used in the place of sand, gravel, and crushed stone in the manufacture of structural concrete and lightweight masonry units.

A subsidiary of the Southern Lightweight Aggregate Corporation in Richmond, Va., the new plant will ship Solite throughout North and South Carolina, Tennessee, Georgia, and Florida. The Aquadale property is the first of several recently purchased slate deposit sites to be activated by Southern Lightweight, which also has in operation at Bremo Bluff, Va., what is said to be the world's largest lightweight aggregate plant producing a controlled product.

The process for manufacturing Solite is similar to that used in the making of portland cement. After the slate is blasted from the ground, it is run through primary crushers, and screened to size. Subsequently it is processed in rotary kilns which are fired to aproximately 2,300 deg. F. During this intense firing process, steam and gases are expanded in the mineral, thereby causing the slate to expand. This expansion results in the formation of millions of tiny air cells, reducing the weight of the slate and making it a natural insulator. The resulting masses are allowed to cool normally, thus producing a thoroughly annealed product.



● The Carolina Solite Corporation's new $1,000,000 lightweight aggregate plant at Aquadale, N. C.

New Rock Wool Process Used At Baldwin-Hill Co. Plant

J. L. Mohun, Southwest Division manager for the Baldwin-Hill Company at Temple, Tex., recently announced a new process for producing rock wool which has been developed by the firm. Mr. Mohun stated that by means of the newly-patented spinning process, mineral slag from several Texas sources is made into rock wool insulation at the rate of 800 tons per month. Production of the first load of spun rock wool was accomplished in July.

Addition of the facilities for the new product is the most recent step in the company's series of improvements. The Baldwin-Hill plant is the only rock wool insulation plant in Texas; it supplies, in addition to the Lone Star state, New Mexico, Louisiana, Arkansas, Mississippi, Oklahoma, and parts of Kansas and Missouri.

Coming Events

January 5-7, 1954—Atlantic City. 52nd annual meeting, American Road Builders, Association. Chalfonte-Haddon Hall.

February 8-11, 1954—Washington, D. C. 34th Annual convention, National Concrete Masonry Association. Shoreham Hotel.

February 15-19, 1954 — Chicago. 38th annual convention, National Sand and Gravel Association and 24th annual convention, National Ready Mixed Concrete Association, with machinery expositions. Conrad Hilton Hotel.

February 19-20, 1954 — Chicago. Annual Convention, National Agricultural Limestone Institute, Inc. Blackstone Hotel.

February 22-24, 1954 — Chicago. 37th annual convention National Crushed Stone Association, with exposition. Conrad Hilton Hotel.

February 22-25, 1954 — Denver. Annual convention, American Concrete Institute. Shirley-Savoy Hotel.

February 24, 1954—San Francisco. 4th annual convention and meeting, American Concrete Agricultural Pipe Association. Fairmont Hotel.

February 25-27, 1954—San Francisco. 46th annual convention, American Concrete Pipe Association. Fairmont Hotel.

Increase in Rates Due On Social Security Tax Beginning Jan. 1, 1954

The social security tax rate for persons whose work counts toward old-age and survivors insurance is scheduled to increase on the first of January. This scheduled increase in tax contribution is in accordance with the 1950 amendments to the social security law, and was enacted by Congress in anticipation of future obligations of the program.

Employees in jobs covered by the law will have 2 percent instead of the present 1½ percent deducted from their pay up to earnings of $3,600 a year, beginning with the first of January. Employers will contribute an equal amount.

The new rates will apply to all taxable wages paid after December 31, 1953, regardless of when earned.

The social security tax for the self-employed is scheduled to increase from the present 2¼ percent to 3 percent for the period commencing January 1, 1954. The self-employed whose work is covered by the law pay their tax just once yearly at the time of filing their Federal income tax return. They will pay the present 2¼ percent social security tax on their 1953 income that counts toward social security. This will be due not later than March 15, 1954. Their first payments at the increased rate of 3 percent will be due March 15, 1955, for the calendar year 1954.

In the meantime the Internal Revenue Service reports that employers will be furnished late this year with income tax withholding tables and Federal Insurance Contributions Act (social security taxes) tables reflecting rates applicable next year.

The next scheduled increase, six years from now, in 1960, will be to 2½ percent each for employer and employee, and to 3¼ percent for the self-employed.

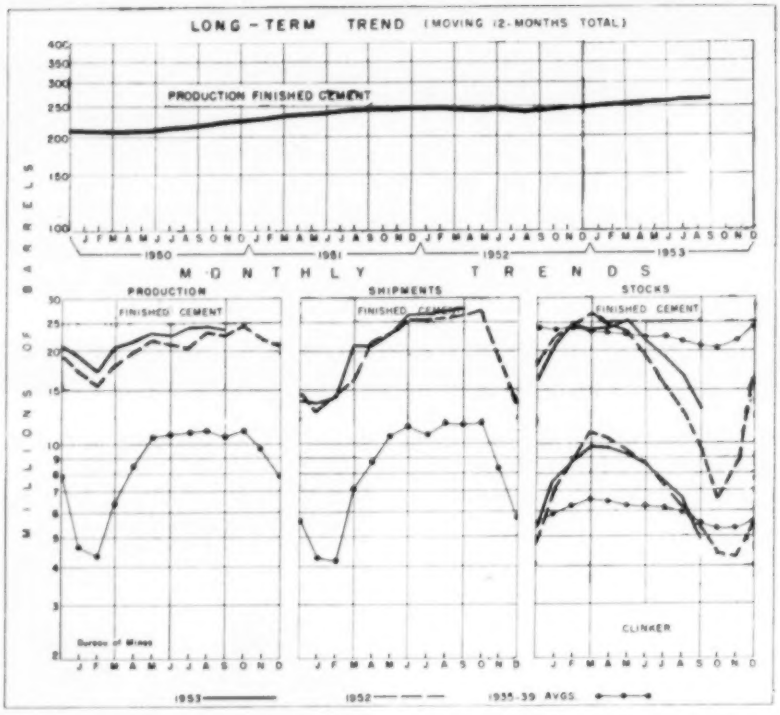
Empire State S.G.-R.M. Assn. Holds Convention at Utica

A convention of the Empire State Sand, Gravel and Ready Mix Association was held on October 13 and 14, 1953, at the Hotel Utica, Utica, N. Y. The morning of the first day was devoted to the directors meeting, with 13 directors present. At this meeting the executive secretary reported that as of October 8, the membership totaled 97 active and 36 associate members.

At the general association meeting and luncheon on Tuesday, October 13, 50 were present, including Stanton Walker, engineering director of N.S.G.A. and N.R.M.C.A., and two representatives from District No. 2 office, New York Department of Public Works. In his address Mr. Walker discussed the matter of specifications, interpretation, and use of sand and gravel as aggregates. A report of the initial meeting of the Sand and Gravel Committee, held on the previous day, was made by George Krom, chairman. This newly-formed committee is made up of members representing every district in the state. The Ready Mix Concrete Committee met in a special session with Mr. Walker.

Ideal weather on Wednesday, October 14, prompted at least 40 members, including several ladies, to visit the plants of the American Hard Wall Plaster Co. (ready mix concrete) in Rome, N. Y., and the Eastern Rock Products Co. (sand and gravel) in Boonville, N. Y. The entire group stopped for a picnic luncheon at the summer home of T. P. Eldred of the American Hard Wall Plaster Co.

The winter meeting of the association is scheduled for January 12, 1954, in Albany, N. Y.; and the 1954 annual meeting will be held during the latter part of May in Buffalo or Niagara Falls.



SUMMARY — Production of finished portland cement in September, 1953, as reported to the U.S. Bureau of Mines, totaled 23,795,000 barrels — 3 percent more than in September, 1952. Mill shipments totaled 27,417,000 barrels — 4 percent more than in September, 1952 — while stocks of 12,823,000 barrels of finished portland cement on hand at the end of the month were 34 percent higher than on the same date a year ago. Clinker production during the month totaled 22,235,000 barrels — 0.5 percent more than during September, 1952.

PRODUCTION — One hundred and fifty-six (156) plants located in 37 states and Puerto Rico reported a production of 23,795,000 barrels of finished portland cement during the month, compared to 154 plants which manufactured 23,010,000 barrels in September, 1952. Clinker production during the month was 22,235,000 barrels, as compared to 22,135,000 barrels during the previous September.

SHIPMENTS — Mill shipments of finished portland cement were 4 percent higher than in September, 1952, and totaled 27,417,000 barrels. Shipments were higher in 12 districts and lower in 8 districts, compared to shipments during the month of September, 1952. Six districts reported gains ranging between 12 percent and 17 percent. Largest decline was one of 14 percent in the Colorado-Arizona-Wyoming-Montana-Utah-Idaho district. Shipments were up 15 percent in northern California but were 3 percent lower in the southern part of that state, as compared to September, 1952. Cumulative totals show shipments to date in 1953 higher in 14 districts and lower in 6 districts, compared to the first nine months of 1952. Greatest percentage gains were registered by the Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi, northern California, western Pennsylvania-West Virginia, and the Indiana-Kentucky-Wisconsin districts, while the major loss in continental United States was in the Oregon-Washington district.

STOCKS — Mill stocks of 12,823,000 barrels of finished portland cement were on hand September 30, 1953 — 34 percent more than at the end of September, 1952 — while stocks of clinker totaled 4,943,000 barrels — 8 percent less than at the end of September, 1952.

Potash Company of America To Explore Canadian Tract

Potash Company of America has taken out a potash prospecting permit for 100,000 acres near Saskatoon, Sask., Canada, according to a company announcement released recently. It was stated that the permit may later be converted into a lease on a portion of the land, not to exceed 10,000 acres, if potash ore is discovered within three years. Plans call for the expenditure of $220,000 on exploration if the permit is retained.

While the firm's operations in the Carlsbad, N. M., area are at levels from 700 to 1,200 ft. down, potash occurrences in the Saskatchewan lands are more than 3,000 ft. deep.

A. B. Andersen Elected Smidth Vice-President, Succeeding G. R. Nielsen

Erik Thune, president of F. L. Smidth & Company, New York, has announced the appointment of A. Brix Andersen as vice-president of the company. The appointment took effect on July 1, 1953, when George R. Nielsen retired after 53 years of service with the Smidth organization.

Mr. Andersen completed his academic training in 1931 and graduated with a

George R. Nielsen

degree of mechanical engineer. He has been with the F. L. Smidth organization for 20 years and served previously in many countries of the world—in Europe, the Far East, Australia, and New Zealand. He is a member of the American

A. Brix Andersen

Institute of Mining and Metallurgical Engineers and several other organizations.

Mr. Nielsen entered the service of Smidth as a youth. He advanced through the shops and graduated as mechanical engineer in 1907. He came to New York in 1907, and after working in the Engineering, Manufacturing and Sales Department was appointed vice-president of the company in New York in 1940, a capacity in which he has served until his retirement. Mr. Nielsen remains as a member of the board of directors.

Israel Pozzolan Ltd. Formed To Process Big New Deposits

Discovery in Israel of large deposits of pozzolana has led the formation of a new company, Israel Pozzolan Ltd., which will undertake to process the material at the rate of 40,000 tons annually.

Located about 13 miles south of Haifa, the deposits are accessible to highway and rail transportation. One of the beds, occurring in a rectangular area of approximately 12 square miles, has been estimated to contain in excess of 200,000,000 tons of pozzolana. Israel Pozzolan Ltd. has been awarded a 25-year concession for the exploitation of the deposits, with an option for an additional 25 years.

At present the company contemplates employing open-pit mining techniques. Processing will include no complex installations. The material will merely be pulverized, dried and packed. Sponsors of Israel Pozzolan estimate their capital requirements at $400,000, of which 75 percent is already at hand.

Ohio's Mineral Resources Featured in New Report

The Ohio Division of Geological Survey, Department of Natural Resources, announces the publication of a new report in two parts, *Publication list* and *The Story of Ohio's Mineral Resources*, compiled by Dorothy G. Watkins and Ethel S. Dean. Identified as Ohio Geological Survey Information Circular No. 9, the 47-page illustrated report is issued for free distribution.

This revised publication list contains reference to all reports and maps ever published by the Ohio Geological Survey. Supplementary features of the new publication list include the following: a finding list or index of subjects and counties; a complete description of all unpublished information available for reference in the files of the Ohio resources.

The Story of Ohio's Mineral Resources is well illustrated with maps and photographs of the industries developing and utilizing the various mineral resources of the state: coal, petroleum and natural gas, clay and shale, limestone and dolomite, sand and gravel, lime, salt and brines, gypsum, and sandstone.

What has been called "the largest power shovel ever put to work in the New England states" is at work at the Ruberoid Company's new asbestos operation near Eden, Vt. This big unit, with its 7-cu. yd. dipper, is a Marion 151-M all-electric model, the largest of three shovels being used in Ruberoid's Vermont Asbestos Mines Division.

Virginia Concern Sponsors Annual Competitions For Student Architects

Fourth-year architectural students at the University of Virginia and Virginia Polytechnic Institute will have the opportunity next spring to compete for $1,500 in cash prizes.

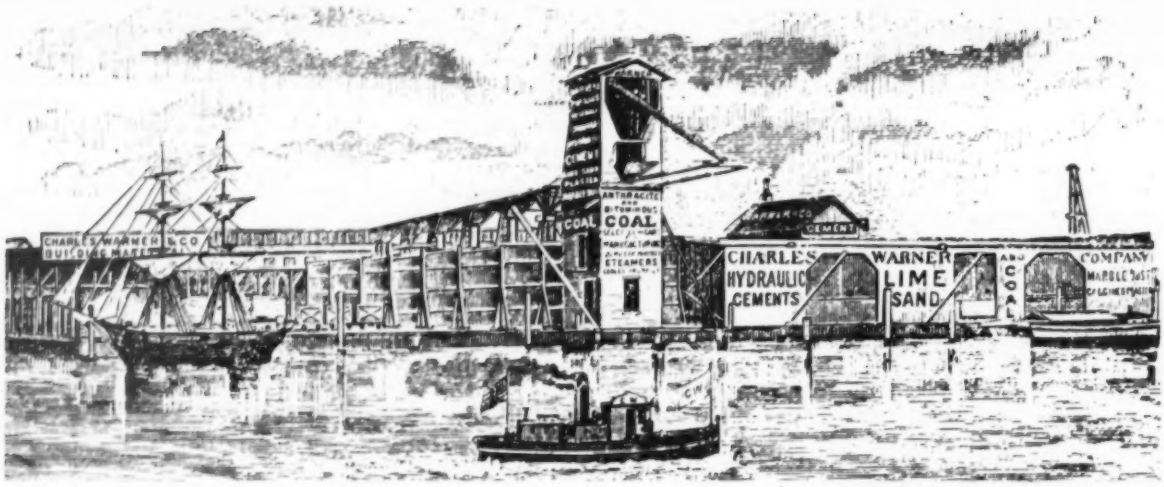
The awards, to be sponsored each year by the Southern Lightweight Aggregate Corporation of Richmond, will be administered by the Virginia Chapter, American Institute of Architects. The prize money will be divided equally between the two schools, and judging will be handled by separate panels.

Each spring architectural students at the University of Virginia and V.P.I. will be assigned a "Solite" award problem, as a regular part of their studies. First-place winners in the competition will receive $250, plus an expense-free trip to the spring meeting of the Virginia Chapter, A.I.A., where they will receive their awards. Second-place winners in the two schools will receive $150 each, and third-place winners $100. The remaining funds will be used as an honorarium for the nationally known architects who serve on the judging panels.

Continuing efforts on a nation-wide scale to promote community action in traffic accident prevention will be stressed by a White House conference on highway safety in Washington on February 17 to 19, 1954.

Cover Picture....

● Located on beautiful Lake Chabot, near San Leandro, Calif., in the rugged country on the east shore of San Francisco Bay south of Oakland is the modern crushing and screening plant of the 60-year-old San Leandro Rock Company pictured on our cover. From the unusually high face on the upper level the gravel is discharged by gravity to the plant, on the same level as Lake Chabot Road, over which all deliveries are made. In the foreground is another pit. Note the irrigation dam and the ditch at the lower left.



● This old-time view of the Warner Company's waterfront buildings at Wilmington, Del., circa 1883, was reproduced in a recent issue of the Warner News, the company's house organ. The drawing made its first appearance in a volume describing the operations of Charles Warner & Company, as the firm was known in that day. According to the book, the company sold about 200,000 lb. of sand per day back in 1883, or about 35,000 tons per year. Today a year's average figure is more than 2,000,000 tons.

J. J. Forbes of Mines Bureau Honored by Safety Engineers

John J. Forbes, director of the U. S. Bureau of Mines, has been elected an honorary member of the American Society of Safety Engineers. Director Forbes and three other persons received the award during the society's annual meeting in Chicago on October 20. Honorary memberships are given in recognition of outstanding achievement in safety engineering or allied fields. Prior to the recent meeting, only three persons had been recognized in the four decades of the society's history.

Since joining the Bureau of Mines as first-aid miner in 1915, Mr. Forbes has held many responsible positions. At the time of his appointment as director of the Bureau of Mines in November, 1951, he was chief of the Bureau's Health and Safety Division.

Gypsum, Gypsum Products Show Slight Decline in 1952

Activity in the gypsum industry, according to producers' reports to the U. S. Bureau of Mines, was generally lower in 1952 than in 1951, as shown by the 3 percent decrease in the quantity of domestic crude mined and a decline of 8 percent in the tonnage of calcined gypsum produced. However, many of the year's losses were principally concentrated in the first quarter, when housing starts were at a low point even on a seasonal basis. Some improvement was noted in the second and third quarters, and by the last three months of the year several of the gypsum products were being sold in record quantities.

The demand for wallboard continued high, and a new record was established for that product. Record quantities of agricultural gypsum and sanded plaster also were sold. The principal gain for agricultural gypsum (and gypsite) was registered in California. The increase in sanded plaster was accounted for by inclusion of perlite premixed plaster in that category.

For the third successive year output of crude gypsum from mines in the United States exceeded 8,000,000 tons. A total of 56 mines, located in 19 states, reported production during the year; of these, 40 were open-pit operations, 13 were underground mines, and 3 were combination pit-underground mines.

Producers reported stocks of crude gypsum totaling 1,688,757 short tons on hand December 31, 1952, compared to 1,547,005 tons on the same date of the preceding year, and 1,496,105 tons at the end of 1950.

The average value of crude gypsum mined was $2.72 per short ton, compared to $2.77 in 1951, and $2.78 in 1950.

Imports of crude gypsum into the United States in 1952 declined 11 percent from the 1951 figure. Canada supplied 91 percent of the total quantity imported, or approximately one-fourth of the apparent domestic supply. Imports declined from every foreign source except Jamaica, which exported to the United States about 60 percent more than in the preceding year. Imports from the Dominican Republic were lower, although there were indications that it would become an important supplier in the near future.

any sore

that

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...is the first of the seven commonest danger signals that *may* mean cancer...but should *always* mean a visit to your doctor.

The other six danger signals are— 2 A lump or thickening, in the breast or elsewhere 3 Unusual bleeding or discharge 4 Any change in a wart or mole 5 Persistent indigestion or difficulty in swallowing 6 Persistent hoarseness or cough 7 Any change in normal bowel habits.

For other facts about cancer that may some day save your life, phone the American Cancer Society office nearest you, or write to "Cancer"—in care of your local Post Office.

American Cancer Society

Cassiar Corp. Asbestos Mine Opened in British Columbia

British Columbia's first asbestos mine went into production last summer when the Cassiar Asbestos Corporation, a Conwest Exploration subsidiary, began operation of its plant in the McDame Creek area. Officials hope that production will go as high as 250 tons daily in the near future, and to 500 tons daily next year.

It is estimated that reserves contain 290,000 tons. Cost of Cassiar's investment was said to be approximately $4,500,000.

● Correction

We regret that due to an unfortunate typrographical error, the author of an article entitled "Short Ball Mills for Dry-Raw and Clinker Grinding" which appeared on page 99 of the October issue of Pit and Quarry was improperly identified. The correct title of J. M. Wolfe, author of the article is Assistant to the Chief Engineer, Traylor Engineering & Manufacturing Company.

"When you reach for **POWER,** *you've got it!"*

"Controls are easy to operate, and not spread out all over the machine. Also, Caterpillar-built Tractors don't smother down like the others. When you reach for power, you've got it!" states Troy O. Swindler, left, supervisor for Everett & Clark, contractors, of Plattsburg, Mo. He is shown here with Howard E. Huey, operator of the Caterpillar D7 Tractor with No. 7S Bulldozer, at a rock quarry near Kearney, Mo. This machine stock-piles gravel, cleans the quarry floor, and on dirt stripping moves 200 yards of dirt per hour on a 75-foot haul.

Much of this work is in "dead" or frozen materials, but the scientifically curved moldboard keeps big loads rolling fast. Tractor horsepower and blade capacity are matched for smooth and steady performance. Specially toughened steels add to the life of blade and cutting edge, and the blade is quickly detached or adjusted.

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Dodge Reports Show Construction Awards Ahead of Record 1952

The Dodge Reports cumulative total of construction contract awards was up 5 percent at the ten-month mark in the 37 states east of the Rockies, compared with the first ten months in 1952, according to F. W. Dodge Corporation, construction news and marketing specialists. The ten-month figure, which was boosted by an October surge in building awards, is $14,749,649,000.

Volume of October awards was 9 percent greater than that in September, and 44 percent above October of last year. This lead is well ahead of the dollar volume of awards said by Dodge to be needed for each of the last three months to give 1953 a tie with record-breaking 1952.

October heavy engineering awards of $499,676,000 were up 11 percent over September and 110 percent over October, 1952; residential awards of $634,582,000 were 25 percent above September and 5 percent above October, 1952; nonresidential awards totaling $758,130,000 were 3 percent below September but 61 percent above October, 1952.

Individual ten-month totals show nonresidential awards, $5,803,671,000, up 5 percent; residential, $5,561,475,000, down 3 percent; and heavy engineering, $3,384,503,000, up 19 percent.

McNary Dam Plants Moved For Big Dalles Dam Job

With McNary Dam on the Columbia River at Umatilla, Oreg., scheduled for completion this year, the aggregates and concrete plants were dismantled last summer and moved down river about 100 miles to The Dalles, Oreg. The contractors on the McNary project, the Guy F. Atkinson Co. and the Ostrander Construction Company, likewise hold a $15,000,000 contract for The Dalles Dam, another Corps of Engineers job which is just starting.

Equipment involved in the transfer includes Symons cone crushers, vibrating grizzly and screens, Cedarapids and Ty-Rock screens, a Marcy rod-mill for manufacturing sand, Dorr pocket sizers, and two Cottrell 25-in. Whirlcones.

The Noble CA 1005 automatic batch plant, also being re-located, has a 1,000-ton, 5-compartment aggregate bin, with a sixth compartment used for cement. Two 7,500-bbl. silos provide additional cement-storage capacity.

● View of McNary Dam, where batch and aggregates plants (center) are being taken down for re-erection at the Dalles Dam.

● Now is the time to make our contributions to the 16th March of Dimes campaign against polio. To fight the battle of prevention for 1954, an additional $7,500,000 will be needed during next year alone to produce a trial vaccine and to stage the largest validity test involving human beings in the history of the world. Concurrently, the March of Dimes will be investing $19,000,000 in gamma globulin, which, at least through next summer, will be our only stopgap against paralytic polio.

McCrady-Rodgers Permitted To Proceed with Dissolution

At Pittsburgh Federal Judge W. S. Gourley granted permission to the McCrady-Rodgers Company of that city to complete its dissolution. This firm, one of eight defendants named in an anti-trust action in Federal Court based on alleged price fixing in the sale of sand and gravel. At the time the case was opened, the company was on the verge of dissolution proceedings. McCrady-Rodgers pleaded no defense to charges of violating the anti-trust act and violation of a previous Federal Court decree barring price-fixing.

McCrady-Rodgers was compelled by the government to post a $25,000 bond to guarantee that it would not go out of existence until the anti-trust charge had been disposed of. After this had been accomplished, and upon authorization of Judge Gourley, the company was free to complete dissolution proceedings.

Expansion Plans Announced For Feldspar Department Of International Minerals

International Minerals & Chemical Corporation is making substantial progress in the expansion program of its Consolidated Feldspar department in the Industrial Minerals Division, according to an announcement released by Norman J. Dunbeck, division vice-president.

Three new plants are to be built, and existing equipment is being enlarged and brought up to date. Power equipment, including shovels, bulldozers, and trucks, will be replaced with new and larger units. Dust-collecting and water-clarification systems are being installed. Flotation capacity at Spruce Pine, N.C., has been increased by 50 percent, and new fine-grind facilities have been installed at Erwin, Tenn.

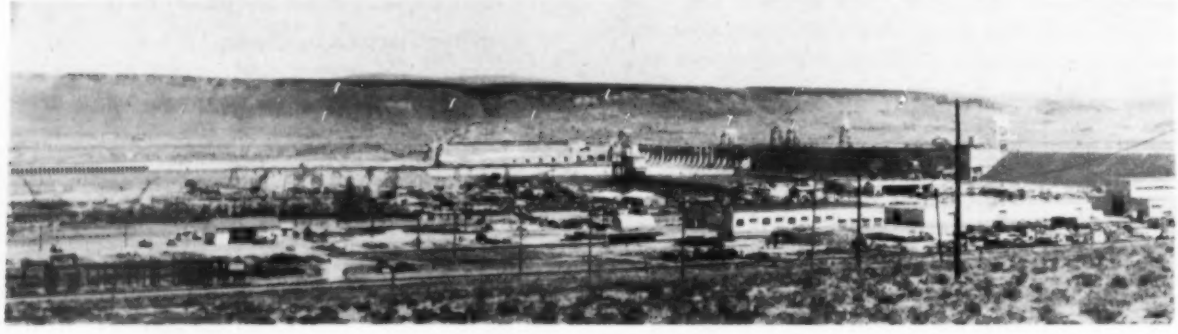
The main quality-control laboratory at Kona, N.C., has been revised and enlarged. New research projects have been started for the feldspar department by International's Research Division, and two other such projects have been assigned to outside laboratories.

Mr. Dunbeck explained that diamond drilling has been completed on International's extensive reserves of feldspar ore in southern Connecticut. Plans are being drawn for a feldspar plant there which will probably employ the LeBaron-Lawver dry beneficiation process, resulting in substantially lower production costs than in conventional methods of beneficiation.

Diamond drilling is also under way on International's nepheline syenite properties in southern Ontario. It is expected that a new, modern mill for processing this material will be built at Blue Mountain, Ontario, which should be in operation by the middle of 1954.

"These two new units in Connecticut and Ontario are part of a long-range plan, and it is expected that a third large unit, a feldspar plant, will be constructed within about one year," Mr. Dunbeck stated.

HARRY M. DIXON has been appointed sales engineer in the Z-Crete Division of the Zonolite Company, Chicago, miners and manufacturers of vermiculite products. Mr. Dixon was previously associated with the Ric-wil Company of Cleveland.



Portland Cement Assn. Re-elects R. A. Hummel Chairman of Directors

R. A. Hummel, chairman of the Lone Star Cement Corporation, New York, was re-elected chairman of the board of directors of the Portland Cement Association at its annual meeting in Chicago, November 9-11. Mr. Hummel has served the association as chairman of the board for the last year.

Five new directors were also elected by association members at their annual meeting. They include the following: Charles Horner, president and general manager, Kosmos Portland Cement Company, Louisville, Ky.; Max E. Grunewald, president, Coplay Cement Manufacturing Company, Coplay, Pa.; Dwight A. Symmes, president, Glens Falls Portland Cement Company, Glens Falls, N. Y.; Waldo E. Tyler, president, Dewey Portland Cement Company, Kansas City, Mo.; and Frank B. Warren, president, Bessemer Limestone and Cement Company, Youngstown, Ohio.

The activities of the Portland Cement Association—a national organization to improve and extend the uses of portland cement and concrete—are limited to scientific research, development of new or improved products and methods, technical service, promotion and educational effort, and safety work. The association's varied services to cement users are made possible by the voluntary financial support of 68 member companies which produce a major portion of all the portland cement used in the United States and Canada.

Mr. Hummel has a distinguished background of service in association activities. He was first elected to the board of directors in 1941 and has served continuously as a director. He also served six times on the executive committee. Mr. Hummel was elected chairman of the Lone Star Cement Corp. last year after serving for almost 11 years as president of that organization. His home is in Larchmont, N. Y.

The retiring P.C.A. directors were: Thomas J. Harte, president, North American Cement Corporation, New York, N. Y.; Eugene D. Hill, president Louisville Cement Company, Louisville, Ky.; R. D. Raff, president, Diamond Portland Cement Company, Middle Branch, Ohio; Charles E. Shearer, president, Keystone Portland Cement Company, Philadelphia, Pa.; and Walter H. Wulf, president, Monarch Cement Company, Humboldt, Kans.

New October Record Set In Construction Spending

Expenditures of $3,200,000,000 for new construction during October, 1953, almost maintained the September level and set a record for the month, according to preliminary estimates of the Building Materials and Construction Division of the U. S. Department of Commerce and the U. S. Labor Department's Bureau of Labor Statistics. Private outlays and public were both at peak for the month.

● R. A. Hummel, Lone Star Cement Corporation's board chairman.

Commercial, educational, and religious building each rose contra-seasonally in October to a new monthly high. The decrease from September in highway work was less than seasonal, reflecting to some extent the unusually good construction weather.

During the first ten months of 1953, expenditures for all types of new construction totaled $29,100,000,000, or 7 percent above the amount for the same 1952 period. Physical volume (expenditures adjusted for price changes) was up slightly—3 percent—from last year.

Almost two-fifths of the total dollar gain over 1952, when the first ten months are compared, was in private residential building. Commercial building, largely because of advances in construction of stores, restaurants, and garages, accounted for the next greatest share—about one-fourth. Most of the balance of the 1953 rise in construction expenditures was in privately-owned public utilities and highway construction.

January-October expenditures for public industrial building (including atomic energy facilities) and for school construction were also considerably greater this year than last, but outlays for hospital construction and public housing were down substantially. Private spending for industrial plant expansion, despite a dip during the summer month, nearly equalled the record 1952 figure for this ten-month period. Military and naval facilities construction likewise was only slightly under last year's total for the first ten months, and farm construction was down moderately.

John Balducci, owner of the Balducci Crushed Stone Works, Gouverneur, N. Y., which was destroyed by fire on August 28, has begun reconstruction of the plant. Mr. Balducci stated that crushed stone, agricultural limestone, and terrazo floor chips would be produced.

International Minerals Installing "Biggest Digger" At Noralyn Phosphate Mine

International Minerals and Chemical Corporation's newest dragline, a giant Bucyrus Erie Model 1250-B, is rapidly taking shape at its future phosphate mining site on the Homeland road just east of Noralyn in Florida.

The "Biggest Digger", as it is being called, has a bucket capacity of 26 cu. yd.; it will relieve the 650-B dragline now working at Noralyn for future duty at the nearby Achan mine. The new dragline will slightly surpass in size International's "Bigger Digger"—a Bucyrus-Erie 1150-B mounting a 21-cu. yd. bucket—now working at the Peace Valley mine. The "Biggest Digger" will be the largest dragline operating in the Florida phosphate field.

Welding is nearly completed on the huge circular tub which will form the base of the new machine. An estimated 20,000 man-hours of construction will be needed to erect the dragline. The tremendous welding job on the tub has already consumed over 1,000 man-hours.

Project Engineer Bill Bolton estimates that construction will run about three months, depending upon the delivery of equipment. All told, the new dragline will require some 50 or more carloads of parts and erection equipment.

Erection Engineer Dave Bain, a veteran of 27 years with Bucyrus-Erie, is overseeing the construction of the dragline. Mr. Bain has erected all four of the 1250-B draglines now in operation in this country.

Two shifts, consisting of seven to eight men a shift, are working daily on the construction, which is under contract by the Mulberry Construction Company.

New Chemical Lime Plant To Use Stone, Lumber Waste

At Baker, Oreg., a newly-formed concern headed by Anthony Brandenthaler, Peter Brandenthaler, and Prescott Lilley will produce burned high-calcium chemical lime by a process which will combine hog-fuel from local lumber industries and high-grade limestone.

Quarrying, crushing and sizing will be done at the deposit, 11 miles west of Baker. It was stated that the company has 3,000,000 cu. yd. of the rock blocked out. Deposits are said to be adequate for a 30-year supply. The Brandenthaler brothers and Mr. Lilley hold a purchase agreement on the deposits from the present owners, Henry Levinger, Sanford Adler, and Leslie Richards.

Included in the installations will be a 118-ft. rotary kiln, to be set up at the old Stoddard Lumber Company site. This kiln will have a capacity of 66,000 tons of raw rock per year. It was indicated that two additional kilns might be installed next year, to bring annual capacity to 176,000 tons. A siding to the burning plant, located in Baker, will be built by the Union Pacific Railroad, according to company sources. Alex Sotyanov Engineers, Portland, will erect the kiln and operate the plant. It was stated that the entire output of the operations has been contracted.

Only Slight Decline Seen For 1954 Construction In Dodge Forecasts

Construction, as measured by the Dodge Reports in the 37 states east of the Rockies, will decline only 3 percent in 1954, as compared with 1953, according to *Architectural Record* and other Dodge publications.

The 1954 estimates were compiled by Thomas S. Holden, vice-chairman, and Clyde Shute, manager of Dodge's statistical and research division. The Dodge Reports cover known and specific construction projects. They are used as a basis for estimating the actual 48-state total of construction.

The Dodge estimate is that dwelling unit starts in 1954 will decline 10 percent in both the Dodge and the government figures, and that the final government total in this category will drop slightly below the 1,000,000 mark to about 990,000. All comparisons are based on nine months of actual figures for 1953 plus an estimate for the last three months.

The complete tabulation of the Holden-Shute estimates for the 37 eastern states follows:

Private and public ownership—Nonresidential, $6,563,000,000 in 1953 and $6,410,000,000 in 1954, a drop of 2 percent; residential, $6,201,000,000 in 1953 and $5,575,000,000 in 1954, a drop of 10 percent; total building, $12,764,000,000 in 1953 and $11,985,000,000 in 1954, a drop of 6 percent; public works and utilities, $3,775,000,000 in 1953 and $4,025,000,000 in 1954, a gain of 7 percent. Total construction: 1953—$16,539,000,000; 1954—$16,010,000,000, a drop of 3 percent.

Private Ownership—nonresidential, $3,929,000,000 in 1953 and $3,730,000,000 in 1954, a drop of 5 percent; residential, $5,794,000,000 in 1953 and $5,330,000,000 in 1954, a drop of 8 percent; total building, $9,723,000,000 in 1953 and $9,060,000,000 in 1954, a drop of 7 percent; public works and utilities, $815,000,000 in 1953 and $850,000,000 in 1954, a gain of 4 percent. Total construction: 1953—$10,538,000,000; 1954—$9,910,000,000 a drop of 6 percent.

Public Ownership—nonresidential, $2,634,000,000 in 1953 and $2,680,000,000 in 1954, a gain of 2 percent; residential, $407,000,000 in 1953 and $245,000,000 in 1954, a drop of 40 percent; total building, $3,041,000,000 in 1953 and $2,925,000,000 in 1954, a drop of 4 percent; public works and utilities, $2,960,000,000 in 1953 and $3,175,000,000 in 1954, a gain of 7 percent. Total construction: 1953 — $6,001,000,000; 1954—$6,100,000,000 a gain of 2 percent.

Million-Year-Old Deposits Basis of New Kansas Industry

One of the newest industries in Kansas is located 25 miles southeast of Goodland, Kans., where the crew of the DeLore Division of the National Lead Company, St. Louis, Mo., is mining diatomaceous marl from beds close to the earth's surface. The white mineral is dug with diesel crawler tractors and hauled by truck to be processed at the firm's modern plant at Edson, Kans., 17 miles away. Depth of the earth overburden runs to 15 ft., and the marl deposits are from 10 to 20 ft. in thickness.

Diatomaceous marl is found in other parts of the world, but Kansas has the only major fresh-water deposit. At the DeLore plant 2½ tons of the material can be processed per hour. The finished product is sold under the trade name of Lorite. Louis J. Brown is superintendent of the plant; his brother, Warren W. Brown, is in charge of mining operations.

The deposits, which are thought to be millions of years old, are expected to supply material for operations lasting 60 or 70 years at the present rate of mining.

Harbison-Walker Quarry Worked 36 Years Abandoned

Removal of the last section of tram track at the old Mt. Union quarry on Jack's Mountain in Huntington County, Pa., completed the abandonment of an operation which during 36 years supplied the Harbison-Walker works at this location with more than 2,000,000 tons of silica rock (ganister).

When Harbison-Walker acquired the Mt. Union works from the Haws Refractories Company in 1900, loose silica was gathered from the mountain side, as ledge rock was not then considered desirable for making refractories. When the loose rock became scarce, H-W leased 200 acres on the mountainside.

Through the years the company added to its resources by purchase and lease, until it now owns about 1,200 acres in addition to some leased acreage. After the supply of loose silica (floe rock) finally was exhausted, ledge rock came into use. A new quarry was opened in 1947, but the old workings were continued until March of this year.

Neighbors Say, "Thanks!" For Oglesby's Dustless Air

Appreciation is appreciated—even by cement plant operators, according to Ralph Moyle, plant superintendent at Marquette's Oglesby, Ill., operation. Last July, after Marquette had installed a new dust-collection system, one of the residents living near the plant handed Mr. Moyle a box of cigars by way of expressing the neighbors' gratitude for the improvement in the atmosphere.

Later Mr. Moyle received a letter from Oglesby's city clerk, Edward Hand, who wished to express the town council's appreciation after its tour of the new installation. Wrote Mr. Hand: "It is good to know that . . . a highly satisfactory method of capturing this low-level dust has been achieved."

Marquette now has two dust-collection systems at Oglesby. The new unit, a Buell Electric Precipitator, has been proved to show 99 percent efficiency. During tests made last summer it captured 1,978 lb. of dust per hour. This amounts to 23¾ tons in a 24-hr. period!

Orelite Mfg. Company To Equip Sintering Plants, Make New Aggregate

A newly chartered firm, the Orelite Manufacturing Company, has gone into production at Raleigh, W. Va., to manufacture machinery and equipment for making lightweight concrete aggregate by continuous hearth sintering process. A fully-equipped shop has been leased, and operations were scheduled to begin on November 1.

The firm will also erect and operate a full-scale integrated aggregate production plant in the Beckley-Raleigh area. Native shale and bituminous coal will be used in this plant, and distribution will be within a radius of 10 miles. Opening date of this operation has been set for April 1, 1954.

According to William Hanson, chief engineer, his sintering process machine, including a circular sintering hearth, has been completely redesigned, and productive capacity has been upped approximately 30 percent. (The machine had been previously tested in operation at Denver, Colo.) One particularly novel feature has been developed in the feeders for proportioning the raw material and solid fuel, which permit accurate volume flow, and also infinite variability for instant change of proportioning ratio. This is accomplished by a variable main feeder drive allowing change in total volume while maintaining the correct ratio of raw material and fuel.

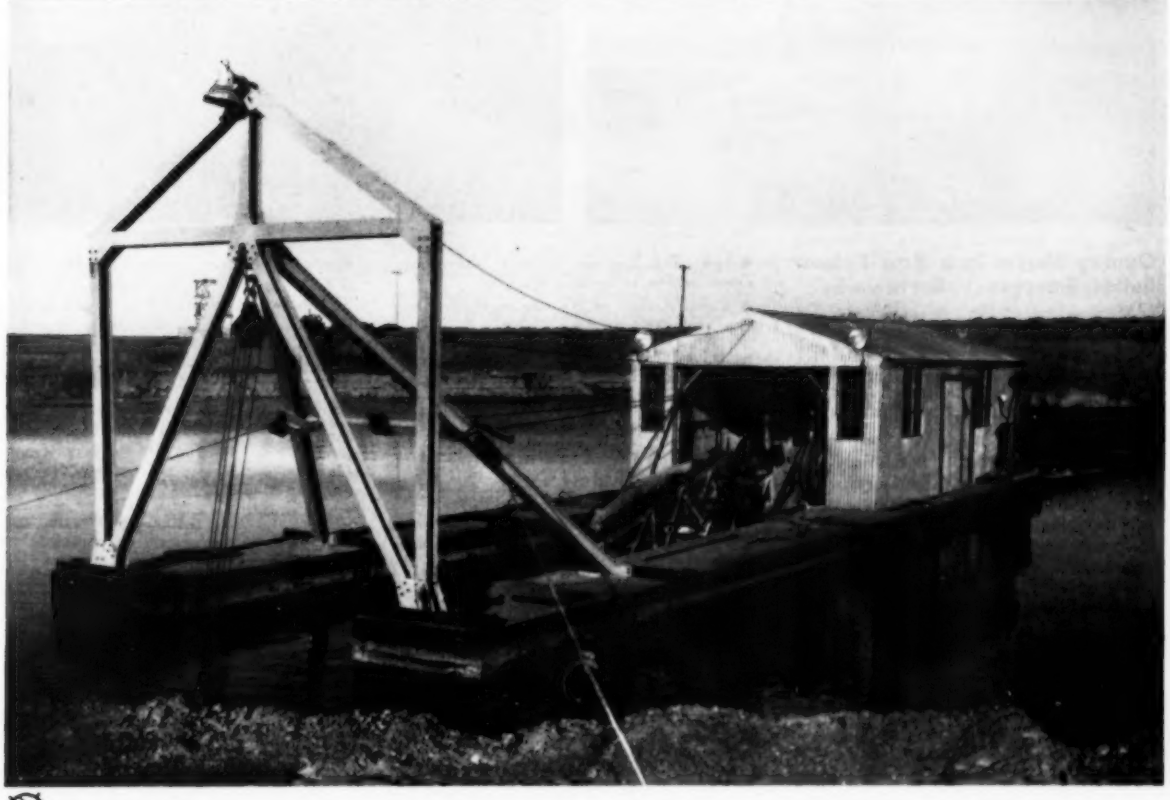
The Orelite Manufacturing Company took over Mr. Hanson's sintering and testing laboratory; and a testing service is available to all producers in the field. Service will include research and investigation in connection with lightweight aggregate production projects.

Officers of the new firm include the following: Cary R. Houchins, president; Eugene R. Harvey, secretary; M. F. Barksdale, treasurer; and A. G. Wilcox, vice-president and general manager. Mr. Hanson, whose engineering business was absorbed by Orelite, in his capacity of chief engineer, is in charge of design and research.

The following concerns and company representatives recently became members of the Cement and Quarry Section of the National Safety Council: P. M. Hedley, industrial relations director, North American Cement Corp., New York, N.Y.; General Refractories Co., Chicago, Ill.; George Lott Jr., President, Palmetto Quarries, Columbia, S.C.,; F. E. Storch, director of safety and personnel, The Whitehall Cement Mfg. Co., Cementon, Pa.; and J. E. Sanderson Jr., personnel and safety director, Albuquerque Gravel Products Co., Albuquerque, N.M.

Two long-established lime operations plants, those of the J. E. Baker Company at York Pa., and the Louisville Cement Company at Milltown, Ind., have been closed. It was announced that these facilities, both in operation for more than 50 years, had been shut down permanently.

AN ALL-EAGLE DREDGE, "Swintek" EQUIPPED, SPEEDS STRIPPING AT DAKOTA DEPOSIT



WHAT is believed to be the first operation of its kind, Dakota Sand & Gravel Company, Bismarck, N. D., has installed a dredge designed and built by Eagle, equipped with a 10"-45' light duty "Swintek" traveling screen chain type cutter, to strip 40 ft. of sandy clay and fine sand overburden, from a gravel deposit. This stripping operation will take some months, to remove the overburden covering the deposit.

Lumps of gumbo too large to pump are kept from entering the nozzle, suction pipe or pump, causing possible stoppage, by the traveling chain on the "Swintek" which screens the nozzle. Cutter bars, at intervals on the chain, agitate the deposit, increasing the intake of solids. Dakota Sand & Gravel reports highly satisfactory performance from the all-Eagle dredge which is operating 18 hours a day.

Send for this NEW Catalog!

16-pages of "Swintek" on-the-job pictures. Tells what it is, how it works, what it saves.

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LEADERS IN AGGREGATE WASHING AND CLASSIFYING EQUIPMENT FOR HALF A CENTURY

EAGLE IRON WORKS

133 Holcomb Ave., Des Moines, Iowa

● Left: The Spencer Quarries shovel operator moves in to save the dike.

● Right: A view of the new earthworks put in place within an hour.

Quarry Shovel in a New Role—Builds Emergency Earthworks

Mechanized equipment can do a lot of things in operations related to the nonmetallic mining industries; but recently we heard of a most unusual task performed by a shovel at the Spencer Quarries near Spencer, S. D.

According to W. A. Barnhart, president of the company, a Koehring 605 1½-cu. yd. shovel was loading broken quartzite from the quarry when a river nearby, swollen by rains, broke through its banks and began seeping through a dike which protected the quarry.

When the shovel operator saw the earthworks dissolving rapidly, he moved in with his shovel, maneuvered it into position in the shallow water, and began to pile up earth for an emergency dike. In a short time the new "levee" was formed. It held; soon the water receded, and the quarry and the 605 were saved. All this, Mr. Barnhart declared, happened within an hour. The accompanying pictures tell a part of the story.

U. S. Sulphur Output Boosted By Three New Operations

Several new sulphur mining projects are under way in Texas, the nation's largest producer of sulphur. Developments are taking place primarily in the Houston area.

The Lone Star Sulphur Corporation is due to start production at a new $670,000 plant located at the Long Point salt dome in Fort Bend County near Richmond. These facilities are designed to produce more than 400 tons of sulphur daily. The plant site is adjacent to the company's 10 completed wells on the south side of the dome structure. Superheated water for the planned Frasch-system sulphur mining will be supplied by three water wells and a 30,000,000-gal. reservoir.

Freeport Sulphur Company is completing construction of a plant at Nash dome near Houston, its fourth new project since 1951. Production is expected to begin early in 1954.

Production was begun in November at Standard Sulphur Company's new $450,000 plant at Damon mound in Brazoria County. The operation consists of three wells, two of which are production wells. The third is serving initially for the elimination of waste waters, but will eventually be used for production.

Indiana Gravel Producer Purchases Illinois Firm

The Interstate Sand & Gravel Co., Inc., of Covington, Ind., recently purchased the capital stock of the Neal Gravel Co. of Mattoon, Ill. Interstate, which was incorporated in 1903, presently operates a plant and maintains its offices in Covington, while Neal operates plants at Attica, Cayuga, and Covington, Ind., with offices in Mattoon. Both concerns are pioneer sand and gravel producers in the Midwest.

The Neal company will continue to operate its three plants, but the offices will be moved to Covington. Fred P. Steinberg will continue as Neal's general plant supervisor, a position he has held for 29 years. Interstate will continue to maintain its offices in Covington, with E. H. O'Brien, president, and Tom A. McGurk, secretary-treasurer, in charge. These two men will also assume the managerial responsibility for the Neal Gravel Co.

The Pecos Valley Portland Cement Company, a Delaware corporation, has been formed to build a 2,500-bbl. wet-process cement plant just south of Pecos, Tex. The contract for the machinery has been awarded to the Kennedy-Van Saun Manufacturing and Engineering Corporation. Officers of the new corporation are as follows: F. M. Reeves, president; Henry Reeves, vice-president; and Cameron McElroy, secretary-treasurer.

Ask The Neighbors Before You Dig

By Francis George

IF someone offers a perfect quarry site cheap, beware! Within the last six months four quarries in this country have been closed down because they were termed "nuisances". They were all perfectly legal, complied with zoning laws, and paid taxes. One in Utah was even owned by the town; but when some of the neighbors complained that a quarry raises dust, is noisy, and sometimes involves blasting, the judge granted an injunction in all cases. In Ohio the new quarry was in the country, the houses were far apart, and the area was wild. Nevertheless, the judge ruled that the noise, dust, and vibrations could annoy the neighbors and that therefore the operation must be stopped.

The doctrine that any abutter or neighbor can insist that the character of a neighborhood not be changed is subject to a balancing of the interests of the two parties and consideration of public welfare; but it is still very much a part of the law, and there is a tendency among many judges to favor the complainant over the business. An old established business usually need not worry about it, although a few years ago a Minnesota quarry got into a lot of trouble. It had been in operation for 12 years when the lawsuit began. There were other quarries and limestone plants in the area, but the character of the neighborhood had changed, and many new houses were being built. Some of the new residents objected to the quarry and sued. The judge ordered the quarry to install dust arrestors in the limestone-grinding operation, to restrict blasting, and to suppress noise. Few judges will touch an established business as long as it is legal; but this case hints at the way the legal wind is blowing.

Almost as important as the rock formation or the crusher site in a new quarry is the attitude of the persons in the neighborhood. If the new enterprise is strongly opposed by any of the people in the area, it is far better to drop an option than to buy a lawsuit. Someone should investigate the attitude of the neighbors as carefully as your lawyers check the title and the zoning. If it is possible to lease a site, get a clause in the lease that makes the *landowner* responsible if the neighbors make trouble. Worry about this before investing in the layout, not later.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

FOR the December, 1923, issue of PIT AND QUARRY manufacturers of various types of machinery were invited to point out their applications in the nonmetallic minerals industries and to give advice for their most effective use. A total of 22 articles resulted, including a wealth of information probably not available anywhere else at that time. These articles were written by experts in their various fields and varied considerably in detail and length.

One of the longest articles entitled "What Do You Expect of Your Crane?" was authored by Walter S. Doxey, assistant general manager of sales, McMyler Interstate Co. The others were as follows: "Selection of Harvesting Plant for Sand and Gravel Pit" by Victor Mill, Morris Machine Works; "The Clamshell Bucket in Excavation" by William Mayo Venable, Blaw-Knox Co.; "The Dragline Excavator for the Gravel Plant" by Bradlee Van Brunt, The Bucyrus Co.; "Selection of Excavating Equipment" by A. E. Holcomb, The Koehring Co.; "Gelatin Dynamite in Quarrying" by Charles S. Hurter, technical representative, E. I. du Pont de Nemours Co.; "Cheaper and Simpler Crushing Plants" by Ray F. Schneider, sales engineer, Williams Patent Crusher and Pulverizer Co.; "Power Selection and Application in Pits and Quarries" by C. S. Lincoln, chief draftsman, Crushing and Cement Department, Allis-Chalmers Manufacturing Co.; "Electric Locomotives for Pit and Quarry" by Frank E. Fisher, Goodman Manufacturing Co.; "Hammer and Single Roll Crushers" by Clinton S. Darling, Pennsylvania Crusher Co.; "Economical Transportation in Pit and Quarry" by H. R. Sykes, sales manager, Fate-Root-Heath Co.; "Shovel Economies in Quarry Work" by A. C. Vicary, Erie Steam Shovel Co.; "Application of Air Separation to the Pit and Quarry Industries" by W. A. Koren, Raymond Brothers Impact Pulverizer Co.; "Electrification for Rock Quarries and Gravel Pits" by C. W. Drake, general engineer, Westinghouse Electric & Manufacturing Co.; "Cableways in Quarrying" by John Sinclair, Lidgerwood Manufacturing Co.; "Stripping Methods in Pits and Quarries" by Oliver Bowles, superintendent, Nonmetallic Minerals Experiment Station, Bureau of Mines; "The Storage of Material in the Pit and Quarry Industries" by Richard K. Meade, consulting engineer; "Multiple-Feed Lubrication with Grease" by Thompson G. Dubbs, Keystone Lubricating Co.; "Gasoline Shovel Applications" by H. S. Strouse, advertising manager, Pawling & Harnischfeger Co.; "Compressed Air in Pit and Quarry," by V. H. Van Diver, Ingersoll-Rand Co.; "Electricity in the Quarry" by R. H. Rogers, Power and Mining Department, General Electric Co.; "Progress in Rock Drilling" by H. J. Bradley, district manager, Chicago Pneumatic Tool Co.

A plant operating article in this issue described the new ready-mixed mortar plant of the Blue Diamond Material Company of Cleveland, Ohio. Designed and erected by the Sturtevant Mill Co., this plant was under licenses granted by the Blue Diamond Material Co. of Los Angeles. This was one of a number of such operations being started up in various parts of the country 30 years ago.

Coronet Phosphate Becomes Division of Smith-Douglass

According to word from Florida sources, Coronet Phosphate Company has sold its holdings in Hillsborough and Polk counties to the Smith-Douglass Company of Norfolk, Va. Purchase price was reportedly $6,350,000. Coronet, producer of approximately one-tenth of the country's raw phosphate output, owned about 12,515 acres of land containing 4,116 acres of phosphate-bearing deposits. All stock of Coronet was taken over, and a Coronet Division of Smith-Douglass was formed.

In addition to its mining facilties, Coronet operated a defluoridation plant near Plant City, Fla., as well as mines and deposits in Hillsborough County and at Tenroc. At the latter operation 500,000 tons of rock were handled annually.

R. B. Douglas is president of Smith-Douglass. J. R. Sheffield is acting president of Coronet Division; and B. G. Dabney, formerly general superintendent of Coronet, retains this position under the new management.

Ft. Worth Sand & Gravel Combines with Texcrete For Production Expansion

The Fort Worth Sand & Gravel Company and the Texcrete Company of Fort Worth, subsidiaries of Texas Industries, Inc., have combined operations in a move designed to provide improved and expanded service to customers of both firms.

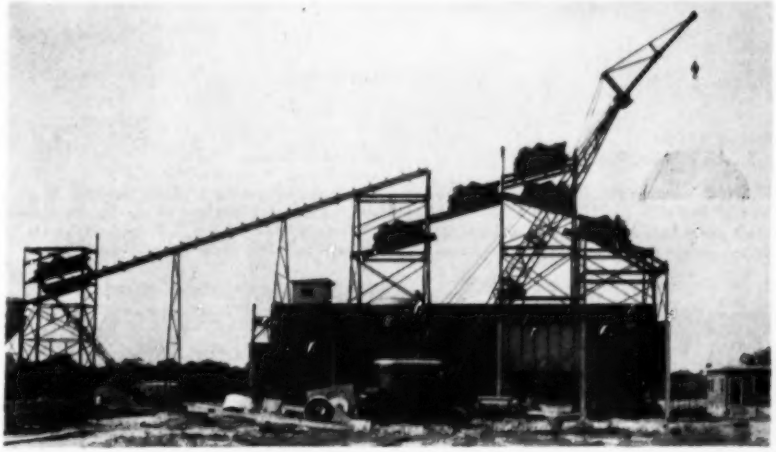
George A. Meihaus, formerly president and general manager of Texcrete, has been named vice-president of Fort Worth Sand & Gravel Co. His principal activity will be in sales and distribution.

This announcement was made jointly by Ralph B. Rogers, president of Texas Industries, and T. E. Popplewell, president of Fort Worth Sand & Gravel Co.

"The new combined operation provides a highly specialized selling staff to fill the requirements of the construction industry in Fort Worth and Tarrant County, operating from a co-ordinated network of seven plants and warehouses in the Fort Worth area," Mr. Popplewell said. "The combination will result in faster, more flexible service, and greater personal attention to individual requirements."

Products will include ready-mixed concrete, Texcrete concrete masonry units, masonry paint, crushed stone, sand and gravel, lightweight aggregate, Sakrete pre-mixed concrete, cement, plaster, metal lath and accessories, form ties, metallic floor finishes, expansion joints, and a complete line of specialty items for concrete construction.

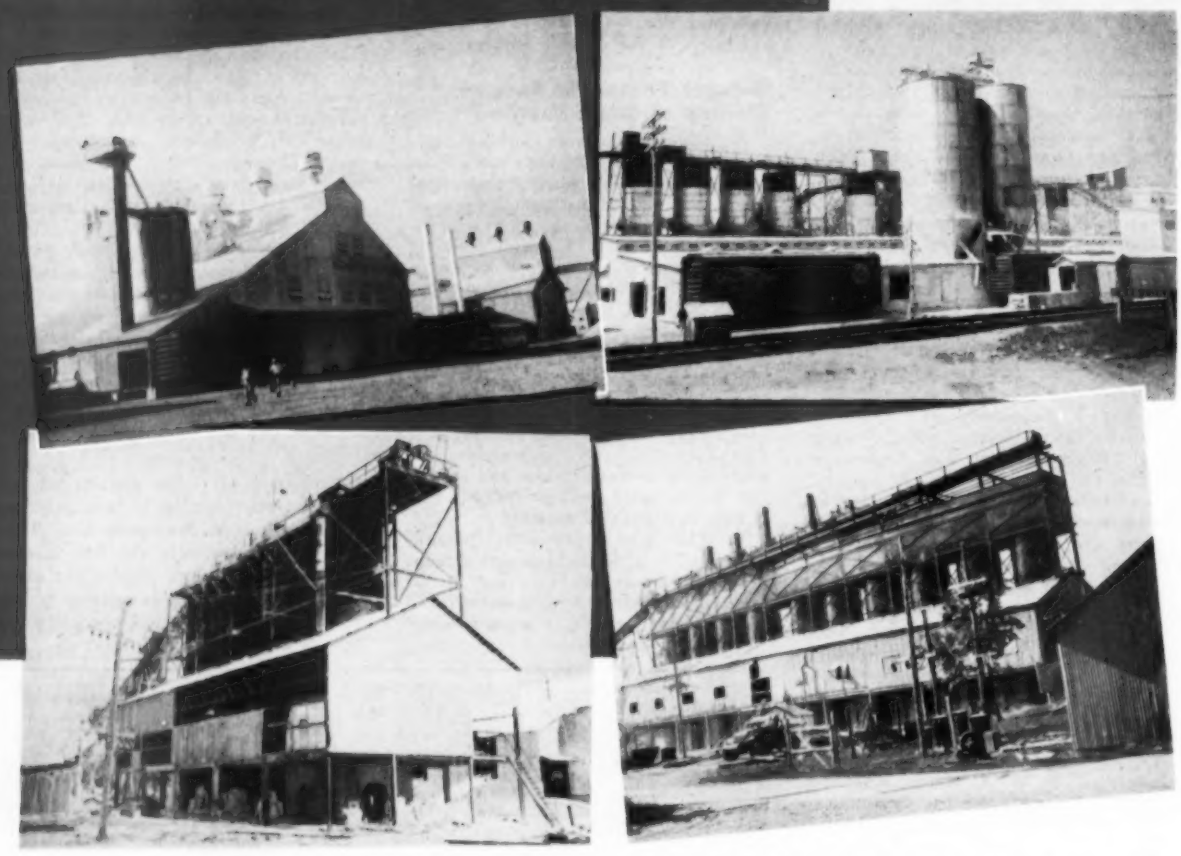
Production of Galite was started recently at the Georgia Lightweight Aggregate plant in Rockmart, Ga. This company is reportedly the first in the Southeast to produce lightweight slate aggregate. The plant is located on the Seaboard Railroad. Otto C. Frei is president of the company.



● Versatility is an outstanding characteristic of a unit being utilized in the construction of the Meramec Sand and Gravel Company's new plant at Pacific, Mo. Here a Lorain 820-J, using a 70-ft. boom and a 25-ft. tip extension, is placing equipment at the plant site. After completion of the new facilities the Lorain will be put to work in the Meramec quarry.

Record Attendance, Outstanding Mark 9th MEETING OF LIME at Birmingham

By WILLIAM M. AVERY



The four photographs grouped here show the Birmingham area lime plants covered on an all-day tour of inspection by the Operating Division of the National Lime Association. Above left: the rotary kiln plant of the Southern Cement Company at Roberta, Ala. Above, right: the shaft kiln plant of the Keystone Lime Works at Keystone, Ala. Below, left: the Alabaster Lime Company's shaft kiln plant at Scotrock, Ala. Below, right: the Cheney Lime & Cement Company's shaft kiln plant at Landmark, Ala.

another ON THE SPOT report

THE ninth operating meeting of the National Lime Association, held at Birmingham, Ala., in mid-October attracted a record turnout of lime men from all over the United States. A three-day meeting, the affair acquired an almost international character by virtue of the attendance and full participation of visitors from Canada, Great Britain, South Africa, and Germany. Several large consuming industries were also represented.

Lime producers in the Birmingham area, the International Paper Company, and the St. Regis Paper Company were hosts to the group, and a full schedule of both business and social get togethers was arranged by M. A. Rikard, Alan B. Cheney, K. L. Hammond, and George L. Scott, who comprised the program committee. A day-long tour of inspection of local lime plants included the following properties: the Keystone plant of Keystone Lime Works, Inc., the Alabaster plant of Alabaster Lime Company, the Landmark plant of Cheney Lime & Ce-

Program OPERATORS

The inspection party stopped for an excellent box lunch at the Keystone Lime Works. Here one of the groups, appropriately perched on empty "Keystone" drums, enjoys well-earned refreshment.

ment Company, and the Roberta plant of Southern Cement Company. In addition, the party of visitors had an opportunity to see the use of hydrated lime in mortar materials at the North Birmingham plant of Southern Cement Co.

A new feature of the program was an open-forum session with representatives of important lime-consuming industries for the purpose of discussing customer requirements. Representatives of the chemical, steel, and pulp and paper industries participated in this discussion, at which C. C. Loomis of New England Lime Co. served as moderator.

In opening the meeting F. J. Collins, chairman of the operating division, noted that in a relatively few years the annual operating meeting has become one of the most important activities of the National Lime Association. He expressed the view that the industry's best means of market protection is the free exchange of ideas on how to improve quality and control costs.

Forum on Preparation Of Stone The first of five open-forum sessions which accounted for most of the formal meeting program was on the subject of quarrying, mining, and preparation of stone for lime burning. Various subdivisions of the subject were discussed by a panel composed of the following individuals: L. S. Smith (The Kelley Island Lime & Transport Company), J. G. Wilson (Warner Company), D. M. Kerr (Kaiser Aluminum & Chemical Corporation), Herman Ballenger (Mississippi Lime Company), and T. W. Grindell (United States Lime Products Corporation). Each of the several speakers presented a brief history of developments in connection with one or more of the various processing operations covered. Significant points made on various subjects are summarized below.

Drilling: The rotary drill has made an important contribution to quarry operations, but bits must still be selected for the particular job they are to do. Serious trouble may result when just enough water is encountered to transform the material into a cutting plaster; when this happens, the best remedy is get a lot of water into the hole as quickly as possible. Reference was made to rotary drilling costs of 23 to 24 cents per foot of hole, and to putting down a 65-ft. hole in 35 minutes with a new very portable rotary drill rig.

Blasting: Reference was made to the recent appearance on the market of plastic blasting caps, and also to a new type of detonating fuse having considerably more tensile strength and explosive force than other similar materials.

Loading: Total loading cost, including depreciation over a 10-year period, for a modern power shovel should not exceed 12 to 15 cents per ton. Mentioned as important developments in connection with shovel design were the torque converters and improved clutches and controls introduced in the last five years.

Crushing: The advantages and weaknesses of various types of crushers were briefly outlined. It was pointed out that in many branches of the equipment field reciprocating motions were utilized first, and improvements were introduced through adaptations of rotary motions. A summary of reasonable costs was presented for such operations as drilling and blasting (18 cents per ton), loading (10 to 15 cents), transportation (5 to 7 cents), primary crushing (9 to 11 cents), and transportation from quarry floor to screen house (2 to 4 cents), and the indicated total of 44 to 55 cents per ton was referred to as the cost of delivering material to the screenhouse, without allowance for overburden removal, taxes, and other factors beyond the control of management.

Plant Design: In a brief discussion of principles to be observed in the design of an ideal crushing and screening plant, the selection of the proper size of shovel and primary crusher was strongly emphasized. Stress was also laid upon providing good visibility for operators, allowing for good circulation in the crusher building, and achieving the maximum of streamlining in the design of chutes and hoppers. One speaker urged that mistakes in plant design be corrected as soon as possible after discovery in order to derive the maximum benefit from such improvements.

Screening: The several types of screens and their main applications were referred to briefly. Washing and scrubbing were also mentioned in connection with screening; and it was pointed out that in some instances even hard, seamed materials (such as decomposed granite) can

be removed by means of scrubbers. One speaker told about his company's continued enthusiasm concerning the heavy-media-separation plant installed several years ago. In this application the silica content of the stone is reduced to ½ of 1 percent.

Another speaker touched briefly upon the use of electric screen heaters, pointing out that an installation in his plant had approximately doubled screen capacities.

Geology: In a discussion of quality problems caused by impurities, it was pointed out that geology is usually the determining factor in respect to the quality of lime which can be produced. Reference was made to the practice of core drilling as a means of finding the extent of faulting, for locating mud seams ahead of mining operations, and for determining how limestone in a deposit has been offset by dolomite. It was stated that a serious disadvantage of core drilling is that it frequently misses large amounts of dolomite altogether.

One producer told about using the chips from rotary drilling operations as a means of studying stone deposits. In this application drillings were reclaimed with a cyclone collector, quartered into samples, and carefully studied for every 5 ft. of blast hole drilled.

Burning Lime Forum The second forum session dealt with lime burning of dolomitic and high-calcium stone in rotary and vertical kilns. Philip L. Corson, G. & W. H. Corson, Inc., served as moderator of a panel composed of Casper Arndt (H. E. Millard Lime & Stone Company), V. J. Azbe (Azbe Corporation), Hermann Lange (Hohenlimburger Kalkwerke), and A. L. Scott (Alabaster Lime Company).

Mr. Lange told in some detail about a new charging device developed in Germany for the controlled distribution of stone in shaft kilns. In this process a graded stone charge ranging from 0.4 to 4.8 in. is fed by a conveying system into a special bucket which is almost the diameter of the kiln. At the time of charging the bucket stands on a scale at floor level, so that neither the equipment nor the operators are exposed to the heat of the kiln. Small stone is placed at the periphery of the bucket, while the coke charge is evenly distributed in the center, leaving a coke-free space of 2 to 3 in. at the periphery.

The bucket is lifted to the top of the kiln by automatic mechanical means, and its contents are discharged without serious disarrangement through quick-opening devices built into the base of the unit. This equipment not only helps to preserve the lining of the kiln, but places the smaller stone, which requires the least heat, near the periphery, while the larger pieces are charged to the inner zone where higher temperatures can be maintained.

Engaged in earnest discussion when we snapped this picture, were Fred Witmer (Ohio Hydrate & Supply Co.), W. H. Remele (Southern Cement Company), and Burton A. Ford (St. Regis Paper Company).

Mr. Azbe recalled, in his opening remarks, that it was just 30 years since he had presented his first paper before the National Lime Association, and that many fundamental changes have taken place in the lime industry during that period. Kiln capacities have increased greatly, burning temperatures have been reduced, kiln runs have been lengthened considerably, and the industry has learned how to produce good lime even with relatively impure dolomitic limestone.

Mr. Azbe stated that 4,000,000 B.t.u.'s per ton on high-calcium lime, and 3,500,000 on dolomite are entirely attainable goals with modern temperature controls. Some other points he stressed: (1) oversize slabs from jaw crushers must be recrushed, and stone should be separated into small, medium and large, and burned separately; (2) stone should be screened in relation to its relative calcining rate, using a slotted screen for this purpose, and feeding the large fraction to one kiln, the small to another; (3) lime should be finished in a low—rather than a high—temperature zone by dividing the gas, firing one portion into the high-temperature zone, and the other into the finishing zone. The speaker believes that in this way all the remaining core will be burned to produce a better product.

Mr. Arndt described some of the practices followed by H. E. Millard Lime & Stone Co. in starting up rotary kilns after relining. The entire lining of the kiln is first swept with fluid, high-temperature mortar to keep abrasive materials from eating out the insulation. Then 6 to 8 tons of railroad ties are placed about 40 ft. back into the kilns, soaked with kerosene, and set afire. After 3 or 4 hours of preheating in this manner, the coal mill is started, and the kiln is placed in high-speed rotation in order to bring a bed of stone down as quickly as possible to protect the brickwork. As additional protection for the lining, the coal mill is operated on a stop-and-start basis for several hours. On start-ups following these procedures, only a few truckloads of reject material is produced; and within 15 or 16 hours first-grade lime is discharged.

A variation of this method has also been worked out and used with good success. After the overhaul is completed, and before the wood is placed in the kiln, stone is brought down to within about ½ hour of the burning zone. After 3 or 4 hours of preheating with a wood fire the coal mill can be placed in steady operation, since a bed of stone is already in position to protect the lining. Although the total time required for this method is about two hours longer than the practice first described, Mr. Arndt believes that it is somewhat superior from the standpoint of protecting the lining.

Mr. Scott described very briefly the lime burning operations of the Alabaster Lime Company's plant which the group had visited the preceding day. The plant has four shaft kilns—two natural draft units, with burners stuck in the doors, and two Azbe kilns with induced draft fans on the top. Burning is at the rate of about 5,500,000 B.t.u.'s per ton of lime and the kilns are drawn at intervals of approximately two hours. The speaker stated that linings consist of 45 percent alumina brick, and that lining life on the natural-draft units is just under a year, compared with about a year on the Azbe kilns, which yield roughly three times as much lime.

Product and Quality Control In the discussion of product and quality control in the lime industry, L. N. Carmouche (The Dow Chemical Company) served as moderator, and the panel included W. J. Barrett (New England Lime Co.), D. G. Hamme (National Gypsum Co.), T. J. Minnick (G. & W. H. Corson, Inc.), and F. P. Stowell (Imperial Chemical Industries, Ltd., England).

Since none of these speakers' presentations could be regarded as a formal paper, only the more significant points brought out will be summarized in this report.

There was general agreement that the operation of sampling is one of the most critical and difficult of all the measures employed in connection with product and quality control. Reference was made to sampling operations on incoming fuel, on raw stone at the quarry face or mine heading, on burned material at the kilns, and on finished products at the point of loading. One speaker made the point that better samples of product are obtained in the course of car loading operations rather than after the cars are loaded. Another stressed the importance of carefully analyzing customer complaints in order to learn where weaknesses exist.

Reference was made to the fact that in respect to over-all quality control the lime industry of today compares very favorably with other chemical industries, but it was noted that there is still considerable room for progress in the field of instrumentation. Several producers expressed the opinion that quality control is still severely limited because of the time lag between the control laboratory and the plant.

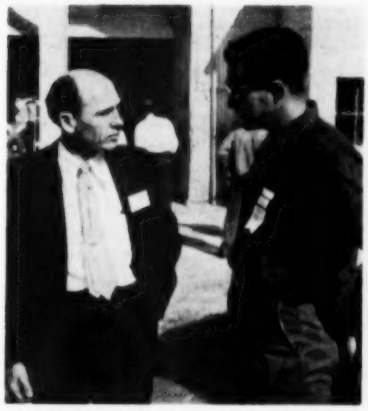
There was considerable discussion of the possibility of developing simplified sampling and quality measurement procedures in co-operation with users of lime. One speaker stated that from a sales department viewpoint alone, temperature rise and unslaked residue are the best measures of lime quality. The principal point made in rebuttal of this argument was that the customer will always have the final word, although some of the participants clearly felt that certain tests could be simplified for the purpose of catching off-grade materials before excessive amounts are produced.

Safety Forum As evidence of the lime industry's increasing interest in all aspects of the problem of safety, most of one session of the Birmingham meeting was devoted to this subject. Lea P. Warner Jr. (Warner Co.) served as moderator, and the panel consisted of Mr. Carmouche, Wallace E. Wing (Marblehead Lime Co.), Geoffrey W. Talbot (Imperial Chemical Industries, Ltd.), and Kent Jander of the association staff.

Mr. Jander briefly reviewed some of the statistics of safety in the lime industry since 1935, when data were first compiled as an association activity. In that year participating firms scored a frequency rate of 28.6 and a severity rate of 3.3 for approximately 2,000,000 man-hours worked. These figures were contrasted with the 1952 showing of 13.320 on frequency rate and 1.025 on severity for over 10,000,000 man-hours worked. In pointing out that the lime industry has still a long way to go in its accident-prevention program, Mr. Jander made the statement that any frequency rate in excess of 10.0 indicates a poor safety performance.

In advancing some compelling reasons for greater safety effort within the lime industry, Mr. Carmouche noted that the indirect costs of accidents are about four times the direct costs. He expressed the view that one-half of one percent of total payroll should be spent on safety work, and that an acceptable safety effort should require one full-time safety man for every 500 employees.

Mr. Talbot expressed the opinion that American lime producers would be well advised to develop effective safety standards before such standards are imposed upon them by the government. According to this speaker, the British Factory Act was the direct result of factory owners' indifference to the atrocious conditions in their plants. Even though the terms of the legislation have become severely burdensome, the goals which are sought are by no means always achieved. Mr. Talbot believes that by putting their own house in order, the English factory owners could not only have forestalled onerous legislation, but would have achieved their purposes far better, far more



Here another one of the hosts, E. A. Bartlett (Southern Cement Co.) undertakes to answer a question raised by Kent Jander (National Lime Association).

This cheerful group, obviously enjoying the traditional busman's holiday, consists of Irving Warner (Warner Company), E. D. Williams (H. E. Millard Lime & Stone Company), and C. C. Loomis (New England Lime Company).

At the North Birmingham plant of the Southern Cement Co., C. H. Ellison, one of the official hosts, explained features of masonry cement production to Robert S. Boynton (National Lime Association) and D. F. Woodbridge (Texas Lime Company).

quickly, and at much less cost.

Mr. Warner's contribution to the safety forum was the presentation of an excellent group of lantern slides in which a wide range of plant safety situations were illustrated both before and after solutions had been achieved. The speaker's running commentary which accompanied the slides gave this portion of the program much of the scope of a planned short course in safety engineering.

User Forum C. C. Loomis (New England Lime Co.) served as moderator for an open forum session devoted to problems of lime consumption among large users of the material. The panel for this new departure in program planning consisted of H. A. Caldwell (Tennessee Coal & Iron Division, U.S. Steel Corp.), H. M. Owen (Gulf States Paper Corp.), T. S. Hosteller (Monsanto Chemical Co.), and Professor James A. Murray (Massachusetts Institute of Technology).

In introducing the subject, Mr. Loomis presented a brief, half-humorous review of the geology of limestone as a means of indicating some of the natural factors which may make it difficult to meet certain specifications. He also complimented the program committee for the discretion that prompted their selection of a New England producer to act as moderator of a discussion involving lime customers in the South.

Mr. Caldwell, speaking for the Birmingham steel industry, presented a brief review of some of the salient facts concerning the use of limestone and lime in the production of iron and steel. He stated that for every net ton of iron produced, 812 lb. of limestone is consumed. He touched upon the use of quick lime, hydrate of lime, and pulverized limestone for neutralizing waste pickle liquors, the use of a bath of lime for neutralizing the acid on pickled coils, and also the application of lime as an interior coating for ingot molds to prevent the hot metal from welding to the mold.

Mr. Hostetter talked about the use of lime in the production of calcium carbide. Stating that his company has a specification calling for the minimum of 95 percent CaO, he disclosed that shipments actually run as high as 96.5 to 96.7 percent. A running record is kept of all the lime that enters their furnaces, this being achieved by means of a detailed analysis of every shipment when it is received. This speaker stated that three suppliers have done an excellent job at meeting the 95 percent specification, and that the ultimate goal is a specification requiring 97 percent CaO.

Mr. Owen expressed serious doubt of the possibility of ever developing a specification basic enough to apply to users even in the paper industry, let alone one that might apply to other industries as well. One of the most serious problems in connection with controlling quality, Mr. Owen stated, is the problem of controlling the activities of human beings; and often the chief failure is to prepare and transmit a set of definite instructions for kiln operators. He suggested that operators be made responsible for one set of quality limitations; and that when these are breeched, responsibility for wider limitations be passed on in successive stages to the foreman, the superintendent, and finally to the plant manager.

Professor Murray pointed out that there are few large users of lime in the construction industry, even though the total tonnage is approximately the same as the "free" tonnage in the metallurgical field. Noting the trend of the construction industry away from quicklime toward hydrate, and away from hydrate toward masonry cement, the speaker stated flatly that quicklime is still unquestionably the best material for masonry work. If the lime industry is to remain in the building field, Professor Murray said in conclusion, it must find some effective way to re-educate the countless small consumers who comprise this market in the superior performance characteristic of quicklime.

Trace Elements Professor Murray also presented to the group an informal report on his research work dealing with the effects of trace elements on the burning properties of high-calcium and dolomitic stone from various deposits in the United States. The purpose of this work was to try to determine why limestones of the same chemical properties, and burned under the same conditions, produce limes of different characteristics.

After describing in detail the methods employed in the tests, the speaker used lantern slide graphs to show the wide range of results obtained in burning samples at various temperatures. Some stones with considerable amounts of impurities showed less shrinkage at all burning temperatures than other relatively pure stones.

These findings, Professor Murray pointed out, appear to indicate that for some stones close temperature control makes little difference, while others require very close control to produce just the material that the customer wants. He noted that in some instances it would be literally impossible for a producer to turn out a uniform product with some of the materials tested, no matter how hard he tried.

Professor Murray believes that more studies must be undertaken of the effect of trace metals, and the influence of crystal structures. In conclusion, he urged that lime producers not hesitate to undertake experimental work on a plant scale.

Next Meeting The Birmingham group, believed to be the largest gathering of lime producers and their wives in the 51-year history of the National Lime Association, elected Clarence Stielstra (The Dow Chemical Co.) to serve as program chairman for the 1954 meeting of the Operating Division. It was announced that Milwaukee will be the scene of the next meeting.

Chicago Firm Gets Contract For Big Canadian Dredge Job

Construction Aggregates Corporation of Chicago has been awarded a contract for a dredging project, said to be the largest ever undertaken, for the Inland Steel Company through its subsidiary, the Caland Ore Company. Cost of the job, it was indicated, may exceed $25,000,000. The dredging operation will be the first step in the development of Inland's iron ore mine in Steep Rock Lake, Ont., Canada.

According to Inland spokesmen, the ore body will be mined by underground methods; however, it will be necessary to remove the overburden of silt and water of the lake before operations can be conducted. Approximately 160,000,000 cu. yd. of material must be removed.

3M Signs New Wage Contract Involving 2,400 Employees

Approximately 2,400 employees of the Minnesota Mining and Manufacturing Company at St. Paul, Minn., voted to accept a proposed contract worked out after a 30-minute walkout of 300 workers at 3M's plant at Hastings, Minn. The men returned to work when they were informed by union officials that a settlement was about to be reached with management. Conciliation talks lasted 12 hours.

The principal wage provision in the contract provides for a 5.7-cent average hourly wage raise, including new bonus provisions. Other benefits were improved health-and-welfare payments and the addition of a fourth week of vacation after 25 years of service.

WASHINGTON NEWS LETTER

THERE is no doubt about it — the November by-elections have eliminated smugness around the high-level offices in Washington. In some cases, they have substituted a sense of panic.

In general, it looks as though every Republican is giving every other Republican lots of advice on how to make certain that, after the 1954 Congressional elections, the party will still be in control. The newspapers, too, through their editorials and their columnists, are not shy about tendering advice. Even many Democrats have been heard from on the subject.

Regrettably, the advice is often inconsistent. If all, or even a part of it, were followed, no program would result. There would be either hopeless confusion or contradictory programs cancelling each other out.

Since so far in the Eisenhower Administration the Treasury Department has advanced its program further than any other, it is receiving a substantial share of the blame for the general disaffection within the Republican party which seemed to be showing through the November election returns. Rightly or wrongly, the so-called "hard money policy" is being blamed for a large amount of the current economic stringency.

Accordingly, the Secretary of the Treasury has been advised from many quarters to abandon the Republican party's long-treasured sound money policy. And to some extent, he has heeded the advice. Even before the November elections, the interest rate on new government financing had been reduced and the Federal Reserve Board reinstituted its pre-Eisenhower policy of supporting the government bond market.

In addition, the Federal Reserve has reduced member bank reserve requirements. This should have the effect of unfreezing bank funds and making them available to commercial borrowers, thereby encouraging the immediate undertaking of projects which might otherwise be postponed.

Of course, Secretary Humphrey has also been advised to stick by his guns or else he will be pointed to as the culprit who has violated or compromised a prime Republican principle.

No member of the Cabinet has received quite so much advice as Secretary of Agriculture Benson. He, too, has been advised to abandon, or at least compromise, his original program. But he has been far less inclined to heed the advice. Accordingly, he has proceeded firmly to reorganize the soil conservation program despite the hue and cry raised, primarily by those who have had a vested interest in its mode of operation. Furthermore, he has made no secret of the fact that while he is administering the various farm price support programs, he really does not approve of them. As a consequence, there is no cabinet officer in Washington whose forthcoming resignation is being so freely predicted. Apparently, the Administration has decided that he is its "dispensable man".

Budget Director Dodge is getting as much unsolicited advice as any Cabinet member. It is his unhappy lot that, regardless of whose advice he takes, he will be in trouble. He is being advised loudly and positively that the promise of a balanced budget must be kept. Without it, the Republican party will have failed to keep faith with its millions of old as well as recently acquired supporters. And this is likely to mean the difference between victory and defeat.

At the same time, Mr. Dodge is being advised that if the national security or the national economy require an unbalanced budget for their safety, there are many worse fates. As a matter of fact, he is being told that if business slips much further, it will be time to revive anti-depression techniques — public works, unemployment payments, etc. — measures which might set the cause of the balanced budget back another decade.

Either way, he is threatened, and voters will be disaffected. If the budget remains unbalanced, they will conclude that in this regard, at least, a Republican promise is no better than a Democratic one. If a business decline is not halted, voters with reduced or eliminated incomes will assuredly not vote for the party in power.

Many of the other policy-making officials are also being told that their policies are costing votes. The Secretary of the Interior is being cautioned that, if he persists in his program of re-emphasizing the private development of the nation's resources, he is risking the consequences of being accused of giving those resources away. The Secretary of Defense is also being warned about the political consequences of his industrial concentration program.

It will be noted that the fear pervading Washington is the fear of losing votes garnered in the Eisenhower victory. By a peculiar twist, only the Secretary of Labor is being advised on how to gain new votes. He is being told that by an adroit handling of the Taft-Hartley issue he could recapture some votes. Exactly how to accomplish this is not explained. But it should be remembered that the Republican platform was committed not to the continuance of the Taft-Hartley Act unchanged, but rather to making necessary changes in that law. If that law is changed, some Republicans will be unhappy, but no long-cherished fundamental principle will be violated or compromised.

Finally, the Administration has been advised repeatedly that it is missing a big chance by failing to exploit fully the Communism-in-government issue. It has frequently been said that unless that is done soon, it will be too late. To find Communists in government after the Republicans have been in control for some time would do as much harm as good. It is clear that this advice has been heeded. And more than any other recent development, it has discomfited the Democrats.

Here again, rightly or wrongly, the turn of the political tide in California is being credited to the timely disclosures of Attorney General Brownell. There is little doubt that the issue will continue to be utilized as long as it continues to have winning power.

Thus, in the aftermath of the November elections, the advice being given to the Republicans falls into three general categories:

1. Do the practical thing. Compromise or abandon some original principles, but give the voters what they want, even if this means following a policy very similar to that of the previous Democratic administrations. After all, it works: it kept the Democrats in power for over 20 years.

2. Stick to original Republican principles even if this means risking defeat. The long-run wisdom of those principles will certainly prove itself.

(*Continued on page 90.*)

NEW BASALITE *Produced*

At Napa Junction Plant—700 Cubic Yards per Day

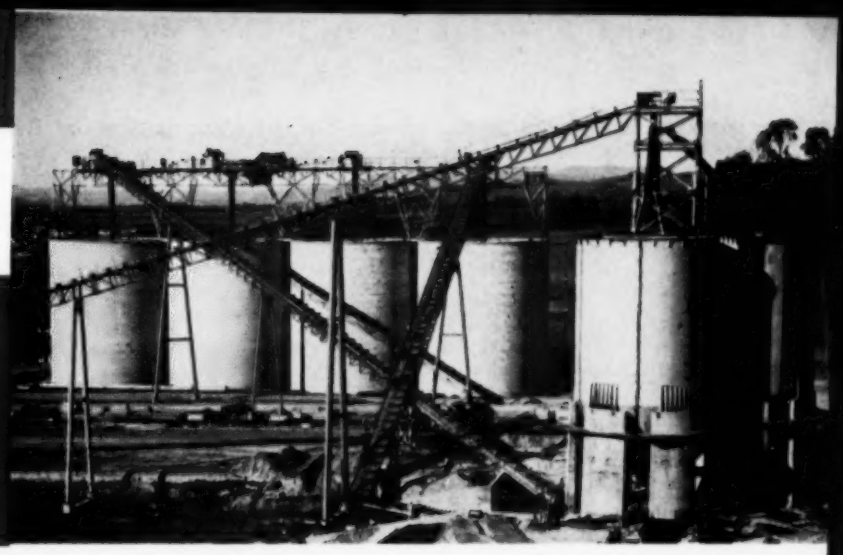
By HARRY F. UTLEY

another ON THE SPOT report

"NEW Basalite" is the trade-name of an expanded-shale lightweight aggregate now being produced in volume from the new plant of Basalt Rock Company, Inc., at Napa Junction, Calif. Output currently is running in the neighborhood of 700 cu. yd. daily from the four-kiln plant, which is one of the finest in the country and probably the largest operation of its kind west of the Rockies.

Since Basalt Rock is itself an important user of lightweight aggregates in its large-scale concrete-block plants at Napa and Stockton, as well as in its pre-cast buildings division at Napa, the company's decision to erect the new facilities was

The four rotary kilns and the kiln-feed building at Basalt Rock Company's new plant, as seen from the top of the raw-storage structure. Note the exhaust fans below.



This view shows the four finished-aggregate storage silos and the three-unit slaking tanks with interconnecting conveyors.

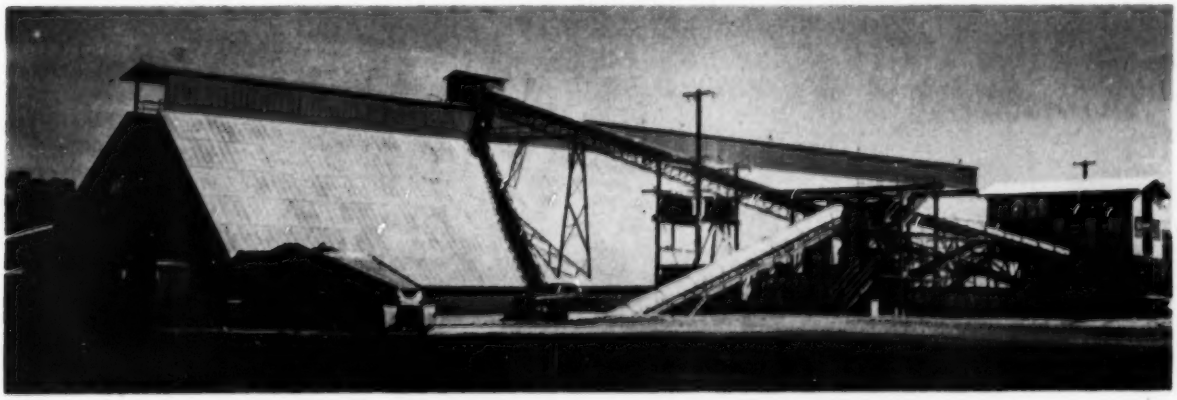
motivated primarily by the desire to assure a dependable source of supply of high-quality aggregates. Likewise, it was inspired by the success of its southern California affiliate, Rocklite Products of Ventura, which has for some years been producing, using, and marketing a similar aggregate. Both Rocklite and New Basalite are strikingly alike in that crushing and sizing of the raw shale is entirely completed prior to expansion, producing well-rounded finished particles with an impervious outer skin surrounding the vesicular interior, insuring high strength, high insulating value, durability, and very low absorption.

The Napa Junction plant is of concrete and steel construction, much of the steel work having been fabricated by Basalt Rock's steel-products division, while the finished storage silos are of Strestcrete construction. Strestcrete, patented by the company, is a method of forming pre-stressed reinforced-concrete structural members through the use of basic concrete blocks. The plant is located on the property formerly occupied by the old Standard Portland Cement Company. The cement plant was abandoned nearly a quarter of a century ago and, while some of the walls of the old buildings still stand, none of them were worth utilizing in the new plant.

The site was selected because of freight-rate advantages, an ample and dependable water supply, and the availability of natural gas to fuel the kilns. The shale quarry is about 3 miles south of the plant, near Vallejo, and the material is trucked to the plant in company-owned 16-cu. yd. tractor-Trailmobile units. In order to break the raw shale into pieces small enough to be handled by the plant hammermill without resorting to blasting or primary crushing, the bulldozer blades on the Caterpillar D8 tractors in the quarry are fitted with Preco back-rippers. These ripper teeth are pivoted behind the blade and swing up out of the way when the dozer is pushing. When the machine is reversed, the sharp, deep-digging teeth drop and go to work ripping up the shale. Loading is done by a Northwest 1¾-cu. yd. gasoline shovel.

At the plant the trailers bottom-dump into a 40-cu. yd. below-ground hopper, and a Link Belt 24-in. pan-feeder puts the shale on a 36-in. by 150-ft. belt-conveyor running up to a Dixie No. 3640 Non-Clog hammermill. The mill operates in closed circuit with a Symons 4- by 16-ft. double-deck screen and ordinarily is engaged in turning out a minus 3/16-in. product, the top size being increased to ¾ in. at times. A 30-in. by 250-ft. conveyor carries the sized shale to the raw-storage building.

The corrugated-steel storage building has a capacity of 10,000 cu. yd. of shale and is mostly roof, pitched to correspond to the angle of repose of the material piles inside. Equipment inside the 400-ft. long building includes three Symons screens to classify the raw material and the necessary distributing and recovery conveyors. The latter conveyor is fully hoppered above the belt for its entire length for ease of loading, done either directly *via* chutes from the screens, or by a Hough Payloader which can load the belt at any point while working from the storage piles. This belt eventually transfers to an inclined



The raw-shale storage building. In the foreground may be seen (left to right) the trailer dumping to the plant hopper, the hammermill crusher, and the primary-screening building.

conveyor running up to the kiln-feed building, where a reversible shuttle belt can fill any of the four 180-cu. yd. bins with a certain size of material.

Expansion of the shale takes place in four Vulcan 8- by 125-ft. all-welded rotary kilns, the feed being variable by way of Link-Belt pan-feeders to the kiln spouts. Input averages about 6 cu. yd. per hr. per kiln. The shale bloats at about 2,000 deg. F., expanding in volume about 30 percent. Kiln linings, for the most part, consist of Mexico Aztec refractory brick. Draft is induced by fans, one to each kiln, exhausting through ducts to wet-type collectors and steel stacks.

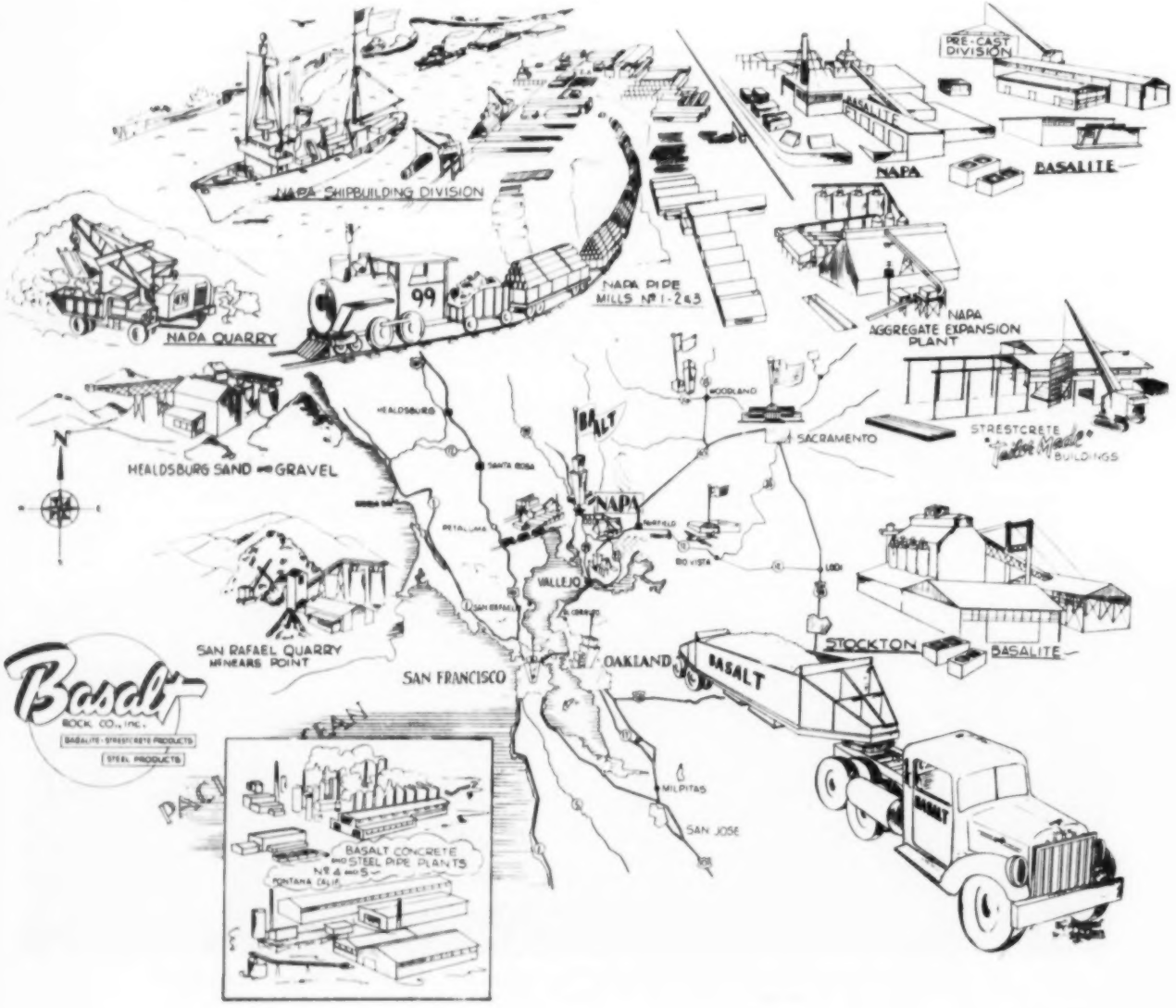
Each kiln turns on two tires and is driven by a U. S. 20-hp. Varidrive motor with a Caterpillar diesel-driven generator for stand-by service in the event of a power failure.

The kilns are gas-fired by Hauck combination burners which can also atomize oil as fuel in an emergency. Cooling of the expanded shale, originally done by a multiple system of oscillating pan-conveyors and water sprays, is now handled by rotary coolers, after which the aggregate is carried by a 24-in. by 500-ft. heat-resisting belt conveyor to three slaking tanks.

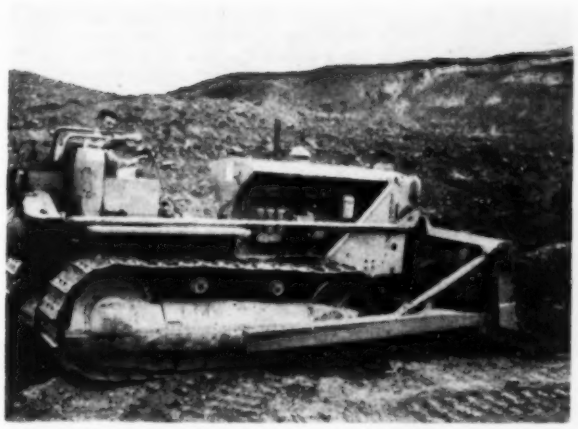
The slaking or hydration of the expanded shale is believed to be an innovation in the industry. The company was prompted to undertake this step during processing because of irregular behavior of similar aggregates observed when used in concrete, due to the conversion of $CaCO_3$ in the raw material to quicklime during burning. Slaking the aggregates stabilizes the lime by hydration and insures that the resulting aggregate will not react unfavorably in the concrete later. The slaking tanks each have a capacity of 1,200 cu. yd., and the aggregate is kept submerged in them in water for 24 hrs. before it is withdrawn, dewatered, and delivered to the four finished-product silos. The finished aggregate is re-screened before it is lowered into the silos, stone ladders being used to minimize degradation. The Strestcrete-built silos each have a storage capacity of 5,000 cu. yd.

Recovery of the finished aggregate is by way of a 250-ft. horizontal conveyor running in a tunnel underneath the silos, the belt transferring at right angles to a 150-ft. inclined belt-conveyor which can load either to cars or to trucks.

The Basalt Rock Co., Inc., has its

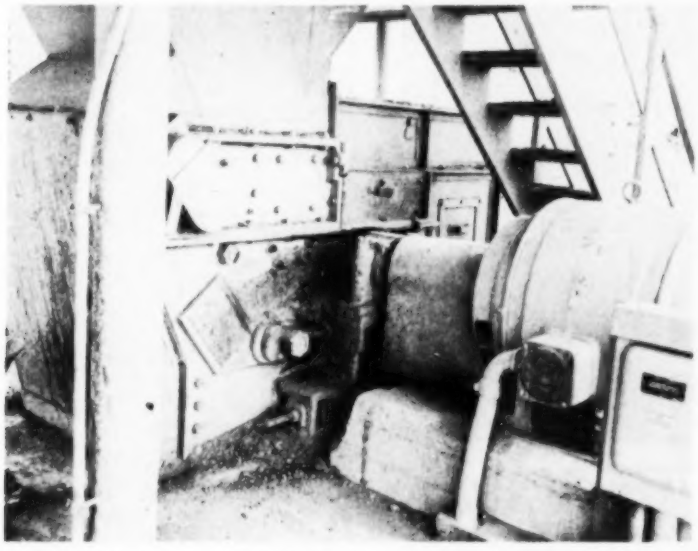


Map showing the various Basalt Rock operations and plants.



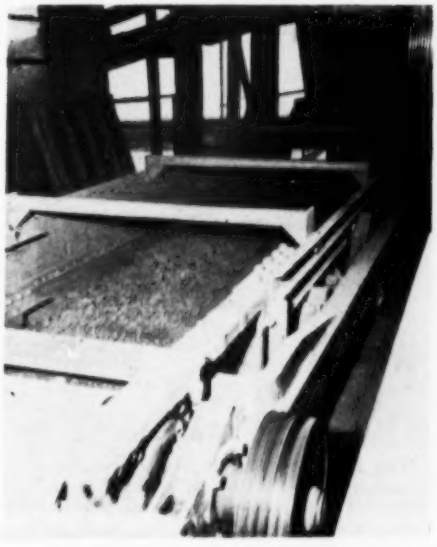
Ripper-equipped tractor bulldozers are used in the quarry to break the shale into pieces small enough to feed the hammermill. This eliminates blasting or primary crushing.

This close-up view shows the pivoted ripper teeth behind the bulldozer blade. The tractor can rip when backing and 'doze when moving forward.



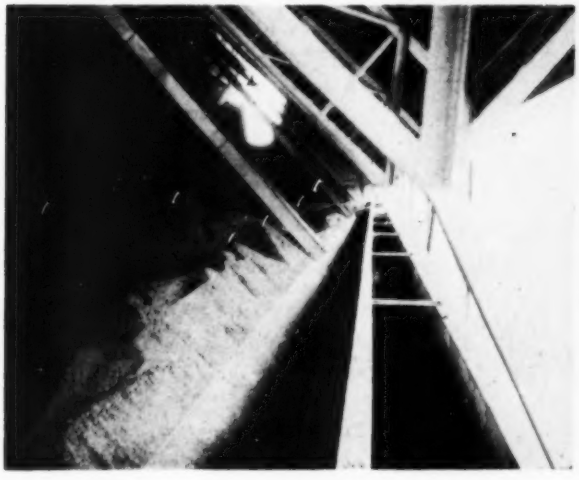
The 36- by 40-in. hammermill which reduces the raw shale to size before expansion. No crushing is done after the particles have been expanded.

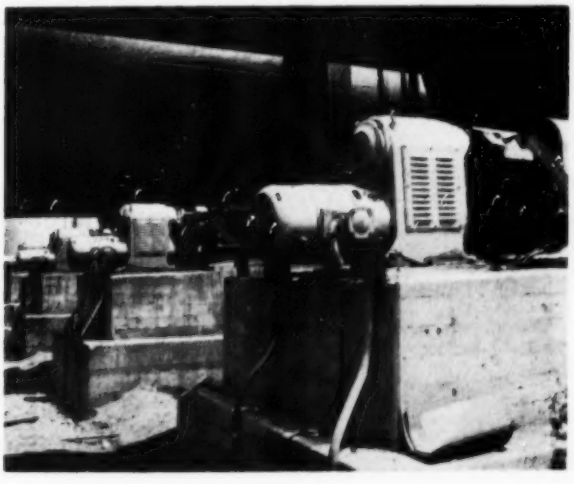
Left, below: The recovery conveyor in the raw-storage building is hoppered for its entire length of 400 ft. to permit loading at any point.



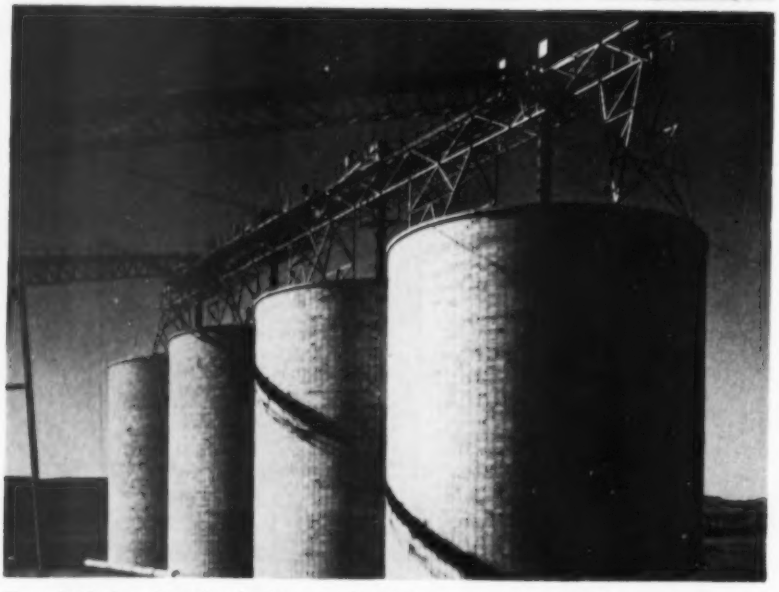
One of the several vibrating screens used to classify the raw and finished products.

Below: The drive units for the kiln, each having a diesel stand-by generator.

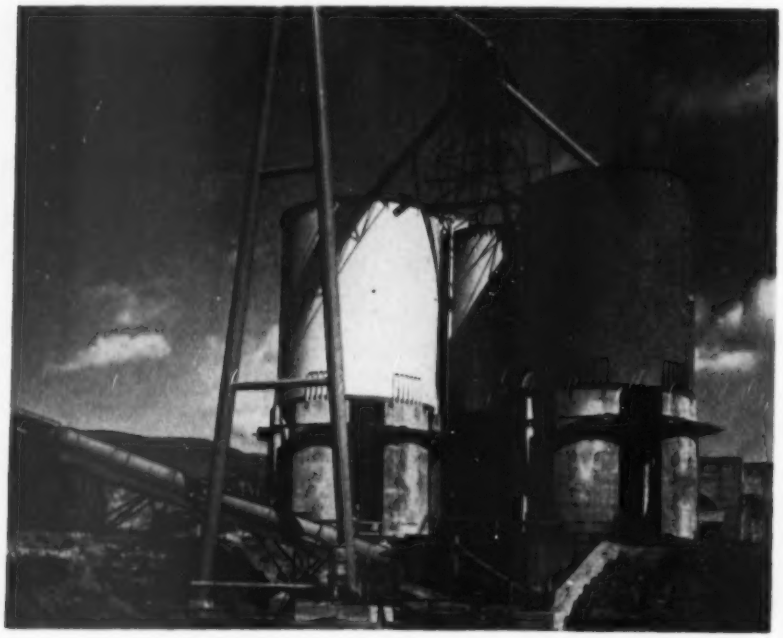




Basalite cars and trucks are loaded by the conveyor in the foreground. In the distance a Standard Portland Cement Co. sign may still be seen on the abandoned walls of the old cement plant structure.



These finished-product silos, having a combined storage capacity of 20,000 cu. yd., are constructed of Strestcrete, a Basalt Rock-patented method of forming structures by prestressing concrete blocks into wall sections.



The three slaking tanks, with dewatering equipment in the foreground below.

main offices in Napa. Albert G. Streblow is president and general manager. E. F. Brovelli, D. O. McCall, and E. L. Ilsley are vice-presidents, and John R. Anderson is secretary-treasurer. As the company's name indicates, it was originally a crushed-rock producer, but over the years its operations have been broadened and diversified to include steel fabrication, shipbuilding, and steel-pipe manufacture. In the pit-and-quarry field alone it operates 15 plants. In addition to the Napa and Stockton concrete-products plants previously mentioned and the new expanded-shale unit at Napa Junction, it excavates and processes crushed rock, rip-rap or sand and gravel at Napa, McNears Point, and Healdsburg; and distributes aggregates and ready-mixed concrete from plants in San Francisco, Santa Rosa, Healdsburg, Napa, and Vallejo. Asphalt-mixing plants are also located on the Napa and Healdsburg properties. A new pre-casting plant for assembling lightweight-concrete wall panels, roof slabs, and channel slabs recently went into operation at Napa, and a well-equipped testing and research laboratory is maintained at Napa also.

New Talc Concern Formed To Operate Near Gouverneur

A new talc mining enterprise, the Reynolds Talc Company, will begin operations soon in the Gouverneur, N. Y., area. Represented locally by LeRoy T. Brown, the firm will have its workings in the Talcville section, east of Gouverneur.

It was reported that a contract had been negotiated with the Rouse Construction Company for the erection of a processing mill.

The Canadian Mineral Industry in 1951, a publication of the Department of Mines and Technical Surveys (Mines Branch) of Canada, contains reviews on each of the metals and minerals produced in commercial quantity in Canada in that year. These summaries were prepared by the staff of the Mines Branch. Total value of industrial minerals alone was given as $267,040,774, an increase of 17.6 percent over the 1950 figure. The 170-page book is available at 25 cents per copy.

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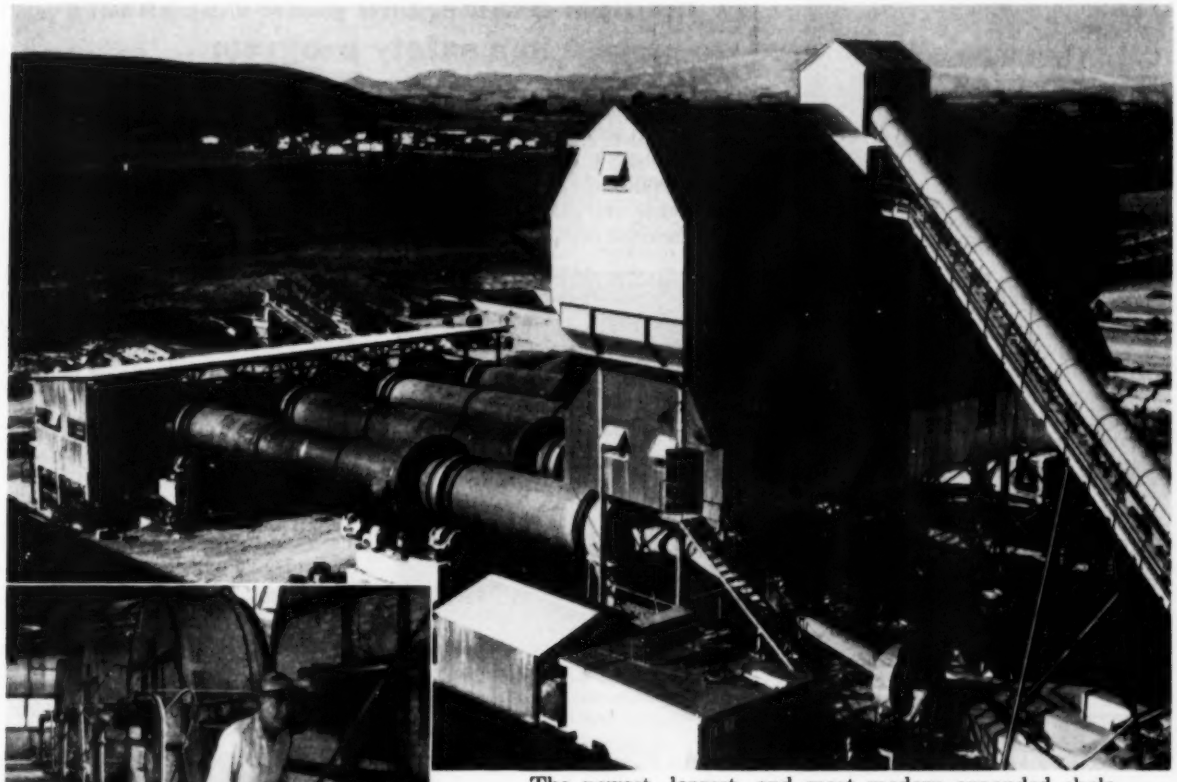

Illustration above shows the four firing hoods which are adapted for both gas and oil.

The newest, largest, and most modern expanded shale lightweight aggregate plant west of the Rockies is shown above. It is one of the fifteen plants operated by The Basalt Rock Co., Inc., of Napa, California. This new plant is now in full operation and is producing "New Basalite" at the rate of 700 cubic yards daily.

This plant, which is the last word in design and efficiency includes four VULCAN 8′ x 125′ all-welded Rotary Kilns. Each kiln has two tires, and is driven by a 20 hp varidrive motor with a standby diesel-driven generator, in case of power failure. The four VULCAN Kilns are gas fired, and in case of an emergency are also adapted for use with oil.

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41st National Safety Congress Held in Chicago

Cement and Quarry Section discusses role of supervisory personnel, visual aids, medical exams, and plant dispensary in a safety program

Seymour Fleming, New York Trap Rock Corp., Newburgh, N. Y., and M. C. M. Pollard, National Gypsum Co., Buffalo, N. Y. Mr. Pollard was re-elected chairman of the Cement and Quarry Section.

another ON THE SPOT report

THE National Safety Council held its 41st annual National Safety Congress and Exposition in Chicago on October 19 to 23. Some 12,000 delegates, representing every state in the Union, as well as numerous foreign countries, attended this important affair. As in previous

By KENNETH A. GUTSCHICK

years, the Conrad Hilton Hotel served as headquarters for the convention, as well as for the exposition, although several other Chicago hotels played host to the various sections of the N. S. C. The Cement and Quarry Section, with which this write-up will be largely concerned, held its meeting at the Hamilton Hotel on October 20 to 22.

One major highlight of the 41st Safety Congress was the formal presentation of a Federal Charter to the N. S. C. by Representative Clifford Davis (Tennessee). The charter was authorized earlier by Congress and signed by President Eisenhower on August 13, 1953. In presenting the charter to N. S. C. president Ned H. Dearborn, Mr. Davis emphasized that the charter symbolized the confidence and trust reposed in the Council by the Federal Government. By authorizing this charter Congress and the President showed their confidence in the continuing ability of the Council to maintain effective leadership in the national safety movement. Indicative of the importance of this event is the fact that the N. S. C. is one of a very small number of public service organizations which have received such recognition. It is believed that the new charter will enable the Council better to mobilize public support for a more effective national safety program.

John Mather, Lone Star Cement Corp., New York City, discussed "The Cement Executive's Attitude Toward Safety".

At the annual council meeting Mr. Dearborn was re-elected to serve his 11th term as president of the Council. E. F. du Pont, director of employee relations, E. I. du Pont de Nemours, Wilmington, Del., was re-elected chairman of the board of directors, while Franklin M. Kreml, Northwestern University Traffic Institute, Evanston, Ill., was re-elected vice-chairman of the board. Also re-elected were George F. Getz Jr., Globe Corporation, Chicago, as vice-president for finance and treasurer; R. L. Forney, general secretary; and B. B. McCulloch and H. H. Greenwald, assistant treasurers.

CEMENT & QUARRY SECTION

The Cement and Quarry Section, meeting in three afternoon sessions, was attended by over 100 delegates representing a variety of nonmetallic minerals producers in this country. The program again was well organized and comprehensive. The first session (Tuesday) featured talks on the respective roles of the executive, the superintendent, and the foreman in a safety program. Pre-placement and medical examinations and plant dispensary operations were the subjects discussed during the Wednesday session. The concluding session considered the value of visual aids in safety. A similar session was held at last year's meeting, and it was so successful that the subject of visual aids was repeated this year. The usual discussion period followed each talk.

A highlight of the three-day meeting was an after-dinner speech given by J. L. Rosenstein, industrial psychologist, University of Miami, Coral Gables, Fla., on the "Human Factor in Industry".

M. C. M. Pollard, general chairman of the Cement and Quarry Section, and also director of safety, National Gypsum Company, Buffalo, N. Y., opened the meeting with a

Clarence F. Stetser, New York Trap Rock Corp., Newburgh, N. Y., and Edward Schwartz, Material Service Corp., Chicago, considered the roles of the superintendent and the foreman, respectively, in a safety program.

general report covering the executive committee meetings held during the year. More detailed reports were given by chairmen of the various committees.

Howard Riefenstahl, chairman of the membership committee, reported that during the last year the Cement and Quarry Section gained 11 new member companies, bringing the total organizational membership to 159. In addition, 5 new secondary or subsidiary units of old administrative members were added, which bring the unit plant membership to over 300. Mr. Riefenstahl commented that this section is one of two of the entire 37 sections of the N. S. C. which suffered no cancellations in membership during the last year.

The speaker added that classification of membership in the section includes cement, crushed stone, sand, gravel, refractories, clay, concrete products, slag, gypsum, rock wool plants; trade associations; and colleges. Membership is distributed throughout the world, including 42 of our own states, as well as Australia, Canada, Finland, Hawaii, India, Israel, Japan, New Zealand, and Sweden. The six states not represented are Arizona, Delaware, Idaho, Maine, North Dakota, and Rhode Island. Mr. Riefenstahl also stated that there are 230 members of the N. S. C. who indicate a secondary interest in the C. & Q. section, but whose primary interest is in a different section.

Supervisory Attitude Toward Safety In the opening session John Mather, vice-president, Lone Star Cement Corporation, New York City, discussed the attitude of the executive toward safety. Mr. Mather emphasized at the outset that the outlook of top management is the keynote to a successful safety program. He stated that executives must be wholly and sincerely interested in safety.

In elaborating on his thesis, Mr. Mather pointed out that the four M's — *machinery, material, money,* and *men* — must be integral parts of the executive's thinking. Machinery and equipment must be installed, operated, and maintained in a safe as well as an efficient manner. The transportation and handling of materials must also be done in a safe and efficient way. Mr. Mather pointed out that safety will mean spending money, but that in the long run it will result in saving money. However, he added that this should not be the ultimate goal of a safety program; rather, the emphasis should be placed on the fourth M—men, by far *the* most important. The executive should command the respect and loyalty of his employees. Without these, a safety program cannot be successful. To do this, he must treat the employees fairly. He must demonstrate his faith in the workers, and not just pay lip service. In concluding, Mr. Mather urged that top management adopt a religious attitude toward safety, keeping safety at the forefront at all times.

Superintendent's Views Clarence F. Stetser, general superintendent, New York Trap Rock Corporation, Newburgh, N. Y., presented a paper entitled "A Crushed Stone Superintendent's View of Safety." Mr. Stetser first discussed in great detail the mechanics of his company's safety program, pointing out the safety devices and safe practices used. He then described how the safety program is carried out.

Mr. Stetser reported that the quarry employees are required to wear a variety of safety gear, including hard hats with liners and chin straps, safety shoes, gloves, safety belts, and prescription safety goggles (if necessary). The company supplies all of these items free, with the exception of safety shoes; in this case the company absorbs part of the cost. Gloves are provided on an exchange system.

Each well drill is equipped with a safety interlocking switch which prevents the operator from plugging in the main power cable when the power is on. In addition, another lock-out switch keeps the power motion in an "off" position whenever adjustments or repairs are to be made. Each drill is also equipped with a Very pistol loaded with a parachute-supported red flare, which is used to summons help in case emergency, particularly during night operations.

Elizabeth Fritz and Lee P. Warner Jr., both of the Warner Company, Philadelphia. Miss Fritz, a registered nurse, discussed the operation of the plant dispensary at Warner's Cedar Hollow plant.

Left to right: Jerome K. Brasch, Portland Cement Assn., Chicago; P. J. Worseck, Lehigh Portland Cement Co., Allentown, Pa.; and Howard Riefenstahl, Alpha Portland Cement Co., Easton, Pa.

Extreme precautions are taken to prevent misfiring during primary blasting, Mr. Stetser reported. Two lines of Primacord, rather than one, are used in each blast hole. Dry runs are made of each delayed action shot; an extra set of caps is initially fired in order to check the wiring and the companys' rotary blasting switch. In order to prevent a second cycle of the delayed action switch, both the common wire and the main lead wires are severed during the shot; this is accomplished by attaching caps and Primacord to these wires prior to the blast. Elaborate signal systems are also used for both primary and secondary blasts.

In the digging operations where electric shovels are used, Mr. Stetser stated, the company has adopted the use of four separate single conductor 2,300-v. power cables of equal value insulation and cross-section instead of the conventional single multiconductor cable. One of the leads serves as a grounding conductor when attached to a metallic part of the shovel. The use of four individual cables facilitates repair during breakdown. For moving the cable the shovel crews are provided with metallic rubber-covered hooks with wooden handles. Shovel operators are protected from flying stone particles by wire screen shields supplemented by Plexiglass windows.

During loading the truck drivers' are required to leave the cab. Roads are kept clear of fallen rock. For crane loading of riprap a specially-designed four-prong grab hook is used which has largely eliminated the need for hand work

In the mill buildings various mechanical protective devices and guards are used at all hazardous locations. Men working near crushers

and screens are provided with approved ear plugs in order to alleviate noisy conditions. Regarding maintenance and repair, modern hand tools and devices for lifting and jacking are used. Overhead travelling cranes handle heavy machinery. To reduce fire hazard, modern degreasing solvents, rather than gasoline, are used for cleaning parts. All electrical repairs are carried on by qualified trained electricians; for example, only electricians are allowed to replace fuses in electrical circuits. A multiple lockout system has been installed for locking out the main switch of a power source.

New York Trap Rock Corporation also has a First Aid Corps, under the direction of the U. S. Bureau of Mines, Mr. Stetser reported. Men for the corps are selected from all areas of activity in the operation; these men are given a refresher course each year. Emergency First Aid Stations are strategically located around the plant.

In carrying out this comprehensive safety program, Mr. Stetser told of the company's safety committee, which is made up of all foremen, union stewards, the assistant superintendent, and the safety director. Discussions at the meetings, which are held monthly, cover recent accidents, a report from the plant inspection committee, and suggestions made by employees to the foremen. The accidents, which are reported in detail on a regular form, are thoroughly reviewed in order to determine the cause and the method of correction. Employee suggestions, Mr. Stetser said, are carefully considered, and those approved are carried out shortly thereafter by the foremen. Follow-up forms make sure that the job is being done.

In concluding, Mr. Stetser emphasized that worker participation in safety is the best way to promote safety consciousness. He also mentioned that good housekeeping is an integral part of safety.

Frank R. Dittoe, Kelley Island Lime & Transport Co., Cleveland, and Kent Jander, National Lime Association, Washington, D. C.

Role of the Quarry Foreman Edward Schwartz, manager, Thornton quarry of the Material Service Corporation, Chicago, concluded the Tuesday session with a discussion of the part of the quarry foreman in a safety program. Mr. Schwartz pointed out that in carrying out his company's slogan "Prevent Accidents by Teamwork", the foreman assumes a major role. First of all he is generally held responsible for all accidents in his department, primarily because it is his job to train his men how to do their job efficiently and safely. He stated that the foreman must be a combination of psychologist and army top sergeant; further, he should know all the jobs in his department thoroughly, and he should be a square shooter, having the welfare of his men at heart at all times. He must be able to iron out petty grievances existing among the men. He must teach the men to work as a team; he must never use force, threats, or abuse in ordering the men. He must teach his men to watch out not only their own safety, but also that of their fellow workers.

Mr. Schwartz next discussed his company's safety program in detail and the role the foreman plays. The Thornton operation has a safety committee consisting of five qualified workers (one from each department) and one foreman who acts as chairman. The committee is rotated every month; thus every foreman and the majority of the workers have the opportunity to serve. Each committee man makes daily safety inspections in his department and also holds weekly safety meetings in his department. The foreman who serves as committee chairman also makes daily inspections (of the entire plant), and during his tour of the plant he has the authority to call attention to unsafe acts and to correct them on the spot.

Every two weeks a general foremen's meeting is held, at which time the safety committee reports its findings. At these meetings the workers' representatives have an equal voice with the foremen and management in making decisions. Previous accidents are among the major items discussed at these meetings. According to Mr. Schwartz, management does not try to blame anyone for an accident; rather an attempt is made to find out *why* and then to remove the cause. Unless that is done, nothing is accomplished, he emphasized.

Mr. Schwartz concluded by stating that the company's safety director repeatedly emphasizes at these meetings that safety is a positive thing and requires positive action. The workers must positively think safety until it becomes second nature. And above all, they must work as a team.

Election At the conclusion of the Tuesday afternoon session the election of officers for the 1953-1954 executive committee was held; all officers were re-elected. It was also decided to expand several of the committees, particularly the engineering and the visual aids committees. The re-elected officers are as follows: general chairman, M. C. M. Pollard; vice-chairman, T. W. Jones, New Haven Trap Rock Company, New Haven, Conn.; secretary, Kent Jander, National Lime Association, Washington, D. C.; news letter editor, Seymour B. Fleming, New York Trap Rock Corporation, Newburgh, N. Y.; engineering committee chairman, L. D. Cowling, Louisville Cement Corporation, Speed, Ind.; membership committee chairman, Howard Riefenstahl, Alpha Portland Cement Company, Easton, Pa.; program committee chairman, Harvey F. Yotter, The General Crushed Stone Company, Easton, Pa.; statistics committee chairman, C. A. Gustafson, The Callanan Road Improvement Company, South Bethlehem, N. Y.; and visual aid committee chairman, H. G. Collins, Lehigh Portland Cement Company, Allentown, Pa. G. G. Grieve was also re-elected staff representative, Cement and Quarry Section, National Safety Council, Chicago, Ill.

Medical Examination, Plant Dispensary The Wednesday session featured talks by Dr. J. F. McCahan, Liberty Insurance Company, New York City, and Elizabeth Fritz, R.N.,

Russell E. Martin, L. G. Everist, Inc., Dell Rapids, S. D., and John MacDonald, Granite Rock Co., Watsonville, Calif.

Cedar Hollow plant, Warner Company, Devault, Pa. Dr. McCahan discussed both pre-placement and periodic medical examinations in industry. He pointed out that the initial doctor's examination should not only determine whether or not an applicant should be hired but should also ascertain his abilities and handicaps in order to determine the proper place in the company for the applicant. He also urged that complete medical examinations rather than just physical exams be given, since a complete medical (which would include past medical history, family history, blood tests, chest X-rays, mental exam, etc.) would better enable the doctor to determine the worker's suitability for a specific job.

In selecting a company physician, Dr. McCahan suggested checking to see that the doctor will be able to visit the plant periodically in order to be properly oriented to working conditions. He should be as vitally interested in preventive medicine as in curative medicine. He should also be able to deal with all types of people.

The speaker advocated periodic medical exams for the workers—perhaps every one or two years. However, he added that if this program would be to ambitious for some firms, perhaps the company could use a selective system for determining the length of time between exams. For example, workers who are sickly or exposed to health hazards should be examined more often than other employees. Key personnel, as well as old workers, should also be checked more frequently.

Dr. McCahan suggested that the results of the exams be kept strictly confidential; this will lead to better co-operation on the part of the workers. He urged that physicians be asked to analyze and review the overall findings with the management regularly. This practice would enable the company officials to plan more effectively for the future health and welfare of the worker.

Miss Fritz discussed "The Operation of a Plant Dispensary and Tie-In with General Public Relations." She described the workings of the dispensary at the Warner Company's Cedar Hollow plant, where some 164 employees are employed. At the outset she referred to her work as industrial health service, aimed at protecting and maintaining the health of the worker. At a plant of this size, where the company doctor necessarily does not maintain a regular office, the industrial nurse has a great responsibility. Consequently she must have certain qualifications, including good educational background, ability to handle emergency cases calmly and intelligently, a pleasant disposition, a good personality, and above all, interest in her work.

In setting up a dispensary, Miss Fritz pointed out, it is important to select a good location (convenient to all). At least two well-lighted, well-equipped rooms are needed, with doors wide enough to accommodate a stretcher. Miss Fritz showed slides of the Cedar Hollow dispensary in order to illustrate these features.

Miss Fritz also pointed out how the work of the industrial nurse ties in with public relations. It begins with the pre-employment medical exam. At this point the nurse personally attempts to establish mutual confidence and good will between the applicant and the company. This public relations work continues throughout the worker's employment in the plant, since he makes visits to the dispensary periodically. For example the Warner Co. requires periodic exams every year for workers over 50 years old, every two years for those under 50. In addition, certain workers take exams every six months. The nurse also follows up cases to see that corrective measures have been made.

Finally, the nurse plays an important role in the rehabilitating of injured workers; she stated that this rehabilitation begins when the worker is first injured and ends when there is 100 percent recovery. She told of one case concerning a shovel operator who lost a leg during an accident. After being fitted with an artificial limb, the worker was allowed to attempt to operate his shovel again. After working at it for brief intervals every day, he soon discovered that he couldn't handle the job perfectly. The important thing in this rehabilitation, she pointed out, was that the worker himself found out his limitations — the company did not tell him. He was later transferred to another job.

Miss Fritz concluded with a discussion of first aid classes she conducts for workers. She reported that 40 percent of the Cedar Hollow employees now hold first aid certificates. First aid cabinets are strategically located throughout the plant.

Human Factor in Industry At the Thursday luncheon meeting, J. L. Rosenstein, noted industrial psychologist, discussed in his eloquent manner the "Human Factor in Industry". Of the many gems of wisdom given, the most striking was, "Treat people like machines!" This seeming "turnabout", he said, is based on the fact that many employers today baby their machinery and equipment, seeing that each unit is properly greased, oiled, operated and repaired — yet they sadly neglect the worker. He also pointed out that loyalty can't be bought or forced but is reciprocal; that fringe benefits are becoming as important as money incentives; and that men don't like to be bossed or pushed around.

He urged that job descriptions be made even for the lowest jobs; and that workers know, before being hired, specifically what is required of them. The employer should then stick to this job description. Mr. Rosenstein concluded his talk with the statement that the key to supervision is to know what picture the worker has of himself and then to act accordingly.

Visual Aids M. C. M. Pollard, chairman, opened the Thursday session with a talk on "The Use of Visual Aids for Supervisory

Employees of Material Service Corporation, Chicago, attending the meeting included (left to right): Charles Perch, Wally Wonders, Charles Kline, Clarence Jorgensen, M. S. Aronstam (safety director), Jim Rooney, Edward Schwartz, Lewis Paulsen, and Doug Kirp.

Samples of photographs used in safety bulletins prepared by A. B. Hoftiezer. Captions of photos are (left): "Make sure the tail-gate is open. It's a long roll down the pile" and (right) "This man works safely, facing the pile. He can see what's coming, and has the jackhammer for protection."

Training". He discussed a short, intensive program dealing with the basic points of safety used by National Gypsum Company for training supervisory forces. The training program, which is based on four 8- to 10-minute sound slide films, has already been presented at each of National's many plants, and has met with great success, he said. The approach used emphasizes the relation of safety to all other phases of operation; safety is actually treated as a necessary part of efficient production. Emphasis in the course is placed on two basic principles: (1) that the supervisor is responsible for safety in his department and (2) that safety requires constant attention and vigilance.

The four films, which are shown singly by National at four successive one-hour meetings, are entitled: "Production Efficiency and Accident Prevention", "Fundamental Facts of Industrial Safety", "Looking For the Cause", and "How to Stop Accidents". No photographs are used in the films; instead, simple drawings are employed. Mr. Pollard showed two of the films at the meeting.

The basic theme underlying the National Gypsum safety course is that there is a sequence of four events in every accident — the reason why, the unsafe act, the accident, and the result. As a teaching device, dominoes are cleverly used to portray each of the four parts. One part leads to the next, and so on, until all the dominoes fall over.

Mr. Pollard stated that the program teaches the supervisor to analyze each accident by first looking at the result, which may be an injury, damage, lost time, etc.; this impresses the seriousness of the accident on the worker. Then the unsafe act is determined; this is also referred to as "looking for the cause". The next logical step is to determine the reason why, to lead the way for taking corrective action and thus stopping accidents. The course indicates that the most important way to get efficient production is to eliminate accident causes before *they* cause accidents, Mr. Pollard concluded.

"Selling Safety with Pictures" was discussed in an illustrated talk by Seymour Fleming, safety director, New York Trap Rock Company, Newburgh, N.Y. Mr. Fleming presented a series of 35 mm. slides, many of which demonstrated safety measures discussed by Clarence Stetser in the Tuesday session. According to the speaker, these slides are shown at plant safety meetings, and they have proved to be very effective. He indicated that the photos are especially valuable if they can point up the competition between various units or departments in the plant.

Among the many safety features illustrated were the following: good housekeeping, adequate guards on drives and on pulleys of conveyors, with grease fittings extended; siren system for blasting; a portable concrete shelter on skids for the blaster; locking-out switches; a portable compressor truck with ladder mounting; a welding truck equipped with fire extinguisher; chemical toilets in the quarry; and whitewashing of stones bordering roadways, particularly at curves. In addition, Mr. Fleming showed many "before and after" views.

The final speaker was A. B. Hoftiezer, safety supervisor, Laverack & Haines, Inc., Buffalo, N.Y., who discussed "Safety Inspection with a Camera". He claimed that every safety man should use a camera, at least for part of his inspections, for it is a very effective weapon in the fight against accidents. The pictures can be used on slides to be shown at safety meetings or else made into bulletins (see accompanying illustrations) to be displayed in the plant. These bulletins pinpoint safety features.

Mr. Hoftiezer claimed that safety men have got into a rut and have become professional fault finders; to turn the tables, he suggested taking pictures of *good* safety practices, as well as bad; furthermore, to personalize pictures as far as possible. He reported that he had done this over the past year, with startling results. The speaker emphasized that 90 percent of accidents are caused by unsafe working habits of the workman. Taking pictures of men working safely helps to focus upon this human element of safety. Mr. Hoftiezer showed a series of slides to illustrate this point.

Kentucky Silica Operation Supplies Glass Industries

One of the newest industries in the area of Marion, Ky., is the Marion Silica Company, headed by N. H. Bogie. Unpromising to the casual observer, the 200-acre site purchased by the firm last year has one redeeming feature—a hill containing a deposit of high-grade silica.

At the base of the hill the material is processed in a plant built at a cost of $200,000. Power shovels and dynamite charges are tearing away a 60-ft. vein of the stone. Several carloads of the clear white processed material have been shipped to General Electric's light bulb plant in Lexington, Ky. The Corning Glass Works also will use silica sand from Marion. It is estimated that production will attain a capacity of 12 carloads per day. Two grades of the crushed material are now produced—70-mesh and 90-mesh.

Mr. Bogie is president; J. B. Alexander, vice-president; Dudley Payton, second vice-president; and R. R. Holland, secretary-treasurer.

Percentage Depletion, Insurance, Car Supply Discussed at Fall Meeting of N.I.S.A.

An "all-together dinner" was held in a private dining room the second night of the N.I.S.A. fall meeting. Seated at the head table are: Cortner M. Hardy (Hardy Sand Co.), president of the association; Mr. and Mrs. Clarence R. Wolf (New Jersey Silica Sand Co.), N.I.S.A. vice-president; Mr. and Mrs. E. J. Campbell (Sun Sand Co.); Mr. and Mrs. E. M. Durstine (Keener Sand and Clay Co.), treasurer; Vincent P. Ahearn, N.I.S.A. In the foreground are, among others, Jesse T. Morie, Arthur F. Harrison, and Sterling Farmer.

another ON THE SPOT report

THE semi-annual meeting of the National Industrial Sand Association was held October 21, 22, and 23, 1953, at The Greenbrier, White Sulphur Springs, W. Va. The three half-day sessions were packed full of important information, the

By WALTER E. TRAUFFER

weather was excellent, and the facilities of this outstanding resort remain unsurpassed. Attendance was also at a record level; a few old familiar faces were missing, but there were also many new ones.

Coming Meetings It was announced at this meeting that the 1954 spring meeting would be held at the Boca Raton Hotel, Boca Raton, Fla., April 20, 21, and 22. Tentative plans are being made for a post-convention air trip to Havana or Nassau. In 1955 and 1956 the spring meetings will be held at the Homestead, Hot Springs, Va., in May. The 1954 fall meeting will be held in New York City, possibly at the Plaza Hotel. In 1955 it will be at The Greenbrier, White Sulphur Springs, in September, and in 1956 and 1958 at The Greenbrier in October. The 1957 fall meeting will be in Washington, probably at the Statler Hotel.

Washington Scene A feature of these meetings which is as popular with the ladies as with the producers themselves is Vincent P. Ahearn's report on the "Washington Scene". He declared that the President's personal popularity is unimpaired after nine months, and his personal relations with Congress remain good, but that this is not true of all members of his staff. Mr. Ahearn also mentioned the tremendous responsibilities of the President and the vast network of boards, agencies, authorities, commissions, etc., for whose actions he is responsible. President Eisenhower, he said, has delegated more authority than either of his last two predecessors, but much more of the work load should be taken off his shoulders. Mr. Ahearn also told of the many serious problems confronting the President. The trend toward decentralization of government he considers a healthy one.

Men like Senator McCarthy who are exposing many dangers to this country can sometimes be criticized for their methods; but Mr. Ahearn stated that the work they are doing is vitally necessary. The caliber of the men who have been appointed to administrative positions in Washington is so high that confidence in our government has been re-established. Many of these men, he said, have taken these positions at great personal sacrifice.

The return to a condition of actual peace, Mr. Ahearn believes, might result in an economic readjustment but not necessarily anything worse. He also pointed out that this country is committed to defend 60 different countries, and we have 650,000 armed men stationed in 23 countries.

Percentage Depletion An informal discussion of the application of the percentage depletion principle to industrial sand was presented by John T. Sapienza, tax counsel for the association. He spoke of the recent reorganization of the Internal Revenue Service, the new procedures, and the fact that the greater decentralization will make it possible to carry matters further locally. Mr. Sapienza also mentioned the various bills being brought up on percentage depletion which would extend it to several more nonmetallic minerals industries. All of these asked for 15 percent allowance. Various bills introduced during the last year asked that stockholders be given the benefit of percentage depletion, that producers be permitted to write off equipment over any period they think best, and that confusion as to mining property be eliminated by counting several non-contiguous parcels as one unit, etc.

The percentage depletion regulations which came out in July, said Mr. Sapienza, had little in them of importance to the industrial sand industry. The 15 percent allowance for quartzite and 5 percent for sand are puzzling, as it is difficult to distinguish between them in some cases. In the eyes of the government, he said, only rock quartzite and silica used for quartzite purposes come in the quartzite category.

With respect to ordinary treatment processes, there was until recently no detailed specification, and as a result there was much confusion. The recent ruling allows pulverization and thermal action necessary to put taconite and other minerals in a state in which it can be beneficiated and loaded for shipment. Mr. Sapienza said that if an Internal Revenue Service agent disallows pulverization, a producer should file protective refund claims if he feels he is in the right, as later developments will certainly throw more light on

this problem. Producers should have no trouble in having allowed, as ordinary treatment processes, primary and secondary crushing, washing, drying, screening, etc.

Counsel's Report Theodore C. Waters, association counsel, commented on the downward trend in insurance rates in many states for sand and gravel digging. The rate for silica grinding is down in some states where it has been excessively high but has risen in others to form a more even pattern. A California association has brought out an excellent report to its members on a hearing on insurance rates, said Mr. Waters. The report should be given national distribution, with some additions to it, for industrial sand. It indicated reductions of 8 1/3 to 20 percent in rates for many classifications of the industry. Mr. Waters stated that he has prepared a chart for all classifications for all states, to be distributed to members. The policy of every company should, he said, be to improve conditions for employees; then high insurance rates would quickly cease to be a problem.

In discussing legislative developments, Mr. Waters said that Oklahoma and Kansas enacted occupational disease compensation legislation in 1953. He also mentioned the growing interest in reduction of noise in industry.

Engineering Problems In his review of engineering problems, Stanton Walker, consulting engineer for the association, described the events leading up to the appointment of a committee to study the specifications for sand used for sand blasting. Tests made in the laboratory showed that a small-scale abrasion test offers promise of providing a means for evaluating the quality of abrasive sands. Such tests can be made on a sample of narrow sieve size range, as the greatest differences among various sands tested were developed in tests of the No. 12 to 16 size. About 300 revolutions of the model Los Angeles rattler were needed to produce the best separation in performance of the various sands.

Mr. Walker stressed the importance of having such tests made by

In this group are John T. Sapienza (N.I.S.A. tax counsel); Frank C. Wachter (Pennsylvania Glass Sand Corp.); and Arnold H. Tanzer (New Jersey Pulverizing Co.).

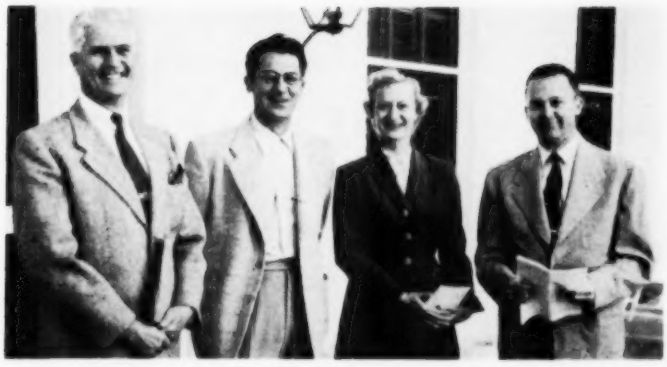
Left to right: Edward Shaw (National Pulverizing Co.); C. P. Helmick (Keener Sand and Clay Co.); and James H. Whitehead (Whitehead Brothers Co.).

Left to right: George F. Pettinos Jr. (George F. Pettinos, Inc.); Caleb R. Megee (Association of American Railroads); and John S. Himmelberger (Bridgeton Sand Co.).

Miss Mary E. Zangaro and Mr. and Mrs. Junius M. Strouss (Deckers Creek Sand Co.).

Left to right: Ralph Lebold (Michigan Silica Co.); Charles G. Runkel (Ayers Mineral Co.); and J. C. Lockwood (Ottawa Silica Co.).

E. C. Sawyer (Ayers Mineral Co.) and John G. Putnam (National Silica Co.).



Left to right: George A. Thornton (Ottawa Silica Co.); Jesse T. Morie (Jesse S. Morie & Son, Inc.); Mrs. Elizabeth M. Baker; and Gene Mason (Clayton Silica Co.).

the association, as other groups have a tendency to do them on an unrealistic basis. Since there is no uniform practice, he urged that one should be established, and that the association help the American Foundrymen's Society to write a fair, practical, and usable specification.

Foundryman's Viewpoint "How the Presently Available Sands Appear to the Foundry Industry" was the subject of a very interesting and informative address by Earl E. Woodliff of the Foundry Sand Service Engineering Company, consultants to the foundry industry. He urged producers to follow their product further than the car door, as the foundryman is alert to any means of improving his product and appreciates any help he can get. The foundryman's problems include sand selection, a comparatively easy task, as many suitable sands are available. His main problem lies in the selection of the small percentage of additives which must be used. The growing complications in this direction are very confusing; many foundrymen spoil their sand by adding too large a quantity or the wrong kind of additives. He advised against producers trying to help solve such problems unless they have a qualified sand engineer in their employ. In most cases, he said, such problems require the services of an outside specialist. The trend toward mechanization to reduce costs, has, he said, further increased the need for such specialists.

In the malleable iron industry, said Mr. Woodliff, 90 different grades of sand are used, and these are made from three basic grades of sand which foundrymen buy and blend to their own requirements. He believes that such blending can be done much better by the sand producers, and that eventually they will have to custom blend sands to each individual foundry's needs. It makes no real difference if the sand has 1-screen or 5-screen distribution as long as it has good expansion and contraction characteristics under heat, and if it has suitable ram density. Individual sands on the market from different areas vary as much as 20 percent in weight, said Mr. Woodliff, and the heaviest ones are most successful. The use of zirconite sands is increasing, he said, chiefly because of its much greater density.

The expansion of sand is another important cause of trouble, according to the speaker, and expansion increases with the silica content. This is not serious, however, unless there is also high contraction due to a low fusing point. The addition of pulverized coal or pitch will solve most such problems for grey or malleable irons, but for steel it is more difficult and it is often necessary to change sands.

The fines content is also a problem and is often due to the use of too much additive. Many foundries of all types are now adding silica flour to natural sand in order to get density, lower expansion characteristics, and better physical characteristics. A permeability of 60 is adequate for grey iron, said the speaker, and will result in smoother castings and lower additive cost. Best results are also obtained with a clay content of about ½ percent.

Mr. Woodliff said that this association could do a great deal to correct present practice in comparing sands. Almost any sand can be made to work if the proper additives are used. The foundryman would like to have a simple chart of all sands a producer has to offer, so that he can select the one most readily adapted to his needs. At present the foundryman blames too many of his problems on the producer; and any help given would change this attitude. In closing Mr. Woodliff summarized the situation by pointing out the following: that mechanization has changed sand control in foundries; that uniformity is the most desired sand characteristic; that there is no universal sand, and that the foundryman wouldn't want it; that there is a growing interest in sand size distribution; that expansion and contraction and ram density are the two most important characteristics; that fines must be controlled; and that the choice between natural and synthetic sands is economic.

Car Supply Caleb R. Megee, vice-chairman of the Car Service Division, Association of American Railroads, painted a rather optimistic picture with respect to car supply. There were only a few car shortages in any areas in 1953, and those were much less serious than in the preceding year. Prospects for 1954, he said, are even better. There are 50,000 more freight cars available now than there were in 1950, in spite of the earlier steel shortages; and the railroads are going ahead with their plans to add 75,000 more. On October 1, 1953, the Class A railroads had 1,678,000 cars.

The efforts of the railroads to keep all users adequately supplied with cars were described by Mr. Megee. As of October 1 there were 42,000 cars on order, and 6,000 new cars were being received per month. The railroads are also increasing the supply by making extensive heavy repairs to cars of up to $2,500 each and extending their useful life from 10 to 15 years. The speaker urged producers to use special care in unloading gondola cars with heavy equipment, as this is a serious factor. Another thing which has helped relieve the shortage is the fact that

Alfred Gawthrop and A. Warsaw (Wedron Silica Co.), and Arnold H. Tanzer (New Jersey Pulverizing Co.).

Learning the bad news after a round of golf are Sterling Farmer (Sand Products Corp.); C. P. Helmick (Keener Sand and Clay Co.); and Arthur F. Harrison (Central Silica Co.).

cars are being loaded more nearly to capacity and that the new cars are usually of greater capacity than the old ones being retired. In 1941, he said, the average car loading was 38.2 tons; in 1952 it was 41.8 tons, and this upward trend is continuing. In 1941 the average car built had a capacity of 47 tons and cost $3,157; in 1952 average capacity was 53.2 tons and cost was $5,900.

The railroads are doing everything possible to get quick turnover of cars, but in spite of their efforts, said the speaker, the number of cars held over 48 hours by customers is increasing. This situation has become worse as the 5-day week has become more prevalent in industry. Mr. Megee stated that greater care on the part of users would help the situation. In 1940, when the demurrage charge was $2.20 per day, the total of such penalties paid by users was about eight million dollars; in 1952, with a charge of $3.00 per day, the total was two hundred forty million dollars.

Mr. Megee also mentioned some of the other ways in which railroads are trying to better their service to customers, including improvements to other equipment and to methods over the years; and research is being carried on at an increasing scale. An exhaustive study is being made of the reasons for rejecting cars, a project which should remedy one serious difficulty. In closing, Mr. Megee lauded the association's work in providing quarterly estimates of members' car requirements for three months ahead. These, he said, are usually very accurate and are very helpful to his organization in its work. Several producers also credited the division's program of record keeping with having reduced their own car repair costs.

Traffic Matters In discussing traffic matters, William W. Collin Jr., commerce counsel for the association, said that the freight rate structure for pulverized or ground sand is currently under negotiation. The rate structure of 1935, he stated, was disrupted by various increases in the 1940's and the present effort is to equalize the discrepancies which developed. The new rates issued on May 2 gave industrial sand in closed cars the same rate as other sands in closed cars, resulting in a decrease of about 50 cents per ton. The intention now is to bring ground sand to 10 percent over other sands, where authorities feel it belongs.

Washington News

(*From page* 75.)

3. Exploit to the fullest the errors of the previous Democratic administration, particularly the Communism-in-government issue. This wins elections as nothing else can.

It is to be hoped that the Administration will not permit itself to be panicked into embracing any one of these programs uncritically, and that its relatively minor defeats will encourage its top officials to consider thoughtfully a program designed to win the voters' confidence and loyalty. If this approach is used, the votes are likely to come more easily.

Phosphate Rock Production Up to 12,000,000 Tons in '52

Phosphate rock produced in the United States in 1952 reached a record high of more than 12,000,000 long tons, according to reports made by producers to the Bureau of Mines. In previous years this production was recorded as mine production, while actually it was a composite of salable products from washers and concentrators of Florida hard rock, Florida land pebble, and Tennessee brown rock; drier production of Florida soft rock (colloidal clay); and mine production of Western rock plus tonnages of Florida land pebble and Tennessee brown rock ore (matrix) used directly. The actual mine production of phosphate ore (total tons of material mined) in 1952 in the United States was estimated as 32,800,000 long tons. All three areas registered increases in 1952—the western states, 21 percent; Florida, 12 percent; and Tennessee, 1 percent. Total stocks in producers' hands rose 30 percent in 1952, as compared to 1951.

Phosphate rock sold or used by producers in the United States rose 2 percent in 1952, with increases reported both in Florida and Tennessee. Western states showed a drop of 7 percent. Total value and average value were higher in 1952 than in 1951.

Imports again showed an increase over the previous year, while exports were less in 1952 than in 1951. The apparent domestic consumption of phosphate rock set a new record, rising more than 5 percent above 1951; 144 percent above 1942.

New York Concern Acquires Utah Gilsonite Properties

Properties of the American Asphalt Association and the Castle Peak Gilsonite Company in the Uintah Basin of Utah have been purchased by G. S. Ziegler and Company of New York, which has a plant at New Market, N. J.

American Asphalt Assn., St. Louis, Mo., has operations at Little Bonanza, Utah; Castle Peak Gilsonite Co., Provo, Utah, has holdings in the Bonanza area and a small pulverizing and packing plant at Provo.

Last year the Ziegler Company purchased the mines of the Utah Gilsonite Company in the Uintah Basin. With these holdings and the newly-acquired properties, the New York firm reportedly has reserves of more than 2,000,000 tons of gilsonite.

The Halliburton Oil Well Cementing Company and subsidiaries reported the following for the six months ended June 30, 1953: service and sales, $53,681,014; net income, $3,947,046. In the corresponding period of 1952 service and sales amounted to $51,550,424, and net income was **$4,143,914.**

An aerial view of the new Windham silica refractories plant of the Harbison-Walker Refractories Company.

A MODERN NEW SILICA REFRACTORIES PLANT

SEVERAL months ago the Harbison-Walker Refractories Company put in operation a new silica refractories plant at Windham, near Warren, Ohio, which incorporates the latest features of design, processing, and equipment known to that industry. Included among the features are the following: mechanization of batch control, impact pressing, unusually accurate temperature control, and complete dust control. The entire operation was carefully engineered to provide for future expansion while still retaining the present straight-line flow of materials through the plant. This new operation is the latest step in a $30,000,000 expansion program begun in 1951 to meet the needs of the rapidly growing steel and other industries. Harbison-Walker and its subsidiaries now operate 32 plants in 11 states and in Canada, producing refractories of many types.

In the new plant silica refractories of two types are manufactured. "Star" brand of the conventional type and "Vega" brand of the superduty type. The products of the plant are used in by-product coke ovens, open-hearth and electric steel furnaces, glass tanks, furnaces employed in the smelting and refining of copper and other non-ferrous metals, and in a wide variety of other furnaces.

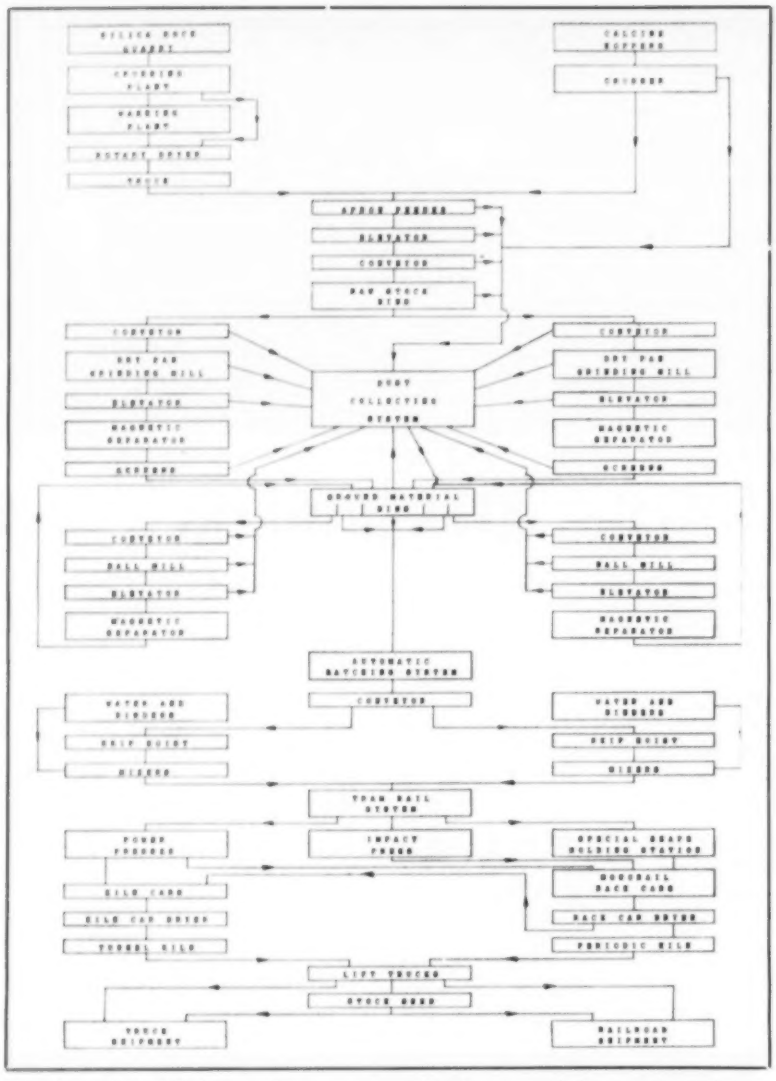
The site of the plant was carefully selected for its proximity to high-quality raw material and to important consuming industries. The raw material used is a coarse quartz conglomerate rock obtained from the company's quarry six miles north of Windham, near Nelson's Ledges. Geologically, it belongs to the Sharon Conglomerate member of the Pennsylvania System, and is of early Carboniferous Age. The quarry site was located only after a prolonged prospecting program.

The quarry at present covers an area of about five acres. The rock averages 60 ft. in thickness and is overlaid by 5 to 20 ft. of surface overburden. Prospect drilling has developed reserves of high-quality rock sufficient to supply the plant for a great many years.

After removal of the surface, vertical holes for blasting are put down by Ingersoll-Rand wagon drills. The rock is worked in 20-ft. benches. It is loaded by ¾-cu. yd. Lorain and General diesel-powered shovels onto 10-ton trucks, which haul the material ¼ mile to the washing plant.

At the washing plant, which has a capacity of 60 to 70 t.p.h., all of the rock is fed by means of a vibrating feeder to an 18- by 32-in. Telsmith jaw crusher. After crushing, a considerable proportion of the rock is washed, and all of it is dried. The rock which is not washed goes directly to stockpiles; that to be washed first passes through a Telsmith cylindrical scrubber to which is attached a trommel having 3/16-in. slotted openings. The oversize from the trommel is transported by

One of the shovels in the quarry, loading to trucks bound for the washing plant.



Flow sheet of the Windham works.

belt conveyors to a stockpile, and the undersize is fed to a Dorr rake classifier for further washing. The cleansed grains from the rake classifier are discharged onto the conveying belt which also carries the trommel oversize to the stockpiles.

The water from the rake classifier, carrying fine silt in suspension, flows to a settling pond. This silt contains a large portion of the impurities occurring in the original rock, and its removal upgrades the quality considerably.

From the stockpiles the rock is fed to a 60-ft. oil-fired parallel-flow rotary drier. This is provided with a Western Precipitation Multiclone dust collector in series with a Dust Suppression and Engineering wet-type collector. The dried product is hauled by company-owned dump trucks to the refractories plant at Windham, and by truck and rail to other plants of the firm.

At the Windham plant the trucks dump the rock onto an apron feeder which provides a steady flow to a bucket elevator for distribution into the raw material bins. This system handles both the washed and the unwashed rock, and the corresponding two grades of calcines.

High-calcium hydrated lime used as a bonding agent is delivered to the plant by railroad in hopper cars. It is unloaded into a lime silo and is delivered to bins at the mixers by means of an air conveying system. Other binders are delivered by railroad car and transferred to the mixing system.

From the raw material bins the crushed rock is fed by electrically-vibrated feeders to totally-enclosed dry-pan grinding mills. The product of these pans is divided by sizing screens into several fractions differing from each other in particle size. The sized material is distributed by chutes or conveyors to the various compartments of the ground material bins. A certain proportion of the material from the dry pans is fed to ball mills by means of carefully regulated belt feeders, for fine grinding. The ball mills are controlled by electric ears and deliver their materials to the proper ground material bins by means of bucket elevators.

All of the material processed in the dry pans and ball mills is passed through magnetic separators for the removal of iron before delivery to the bins.

Following the grinding of the raw material and its classification in accordance with particle size, the fractions must be re-assembled in proper proportions in preparation for forming into the various sizes and shapes of brick. In order that the fired product may have the proper physical properties, the raw material brick-batch must be made up of a properly graduated series of particle sizes. Close control of the particle sizing is one of the most important requirements of the manufacturing process.

Raw material processing through the dry pans is a continuous operation. However, the preparation of the raw stock for forming into brick is done on an intermittent or batch basis, mainly for the purpose of securing the greatest possible degree of control over the composition and grain sizing.

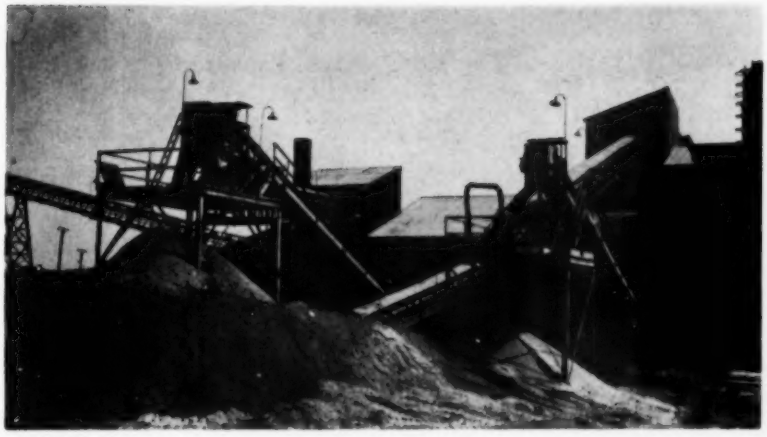
The most thorough engineering study and planning went into the design and construction of the batching system. Materials are automatically discharged from the selected ground material bins in the desired proportions by weight, batched, and delivered to the mixers. The material from the bins can be delivered to any of the several mixers by a simple adjustment at the control panel. If the operation of any portion of the batching system is interrupted, the entire system automatically shuts down, and the blast of a horn notifies the operator. By consulting the control board, he will learn the exact location of the part needing attention.

The mixers in which the batch is given its final processing in preparation for molding consist of totally-enclosed stationary pans having rotating mullers and scrapers. Feed to the mixers consists of ground and properly proportioned silica raw materials, water, and binders. The mixers are so connected to the batching system as to receive all of the materials in pre-determined sequence, and

mixing times are standardized. At the end of the time allotted, the contents of the mixer are discharged into tram buckets. When filled, the buckets are delivered to the presses or special-shape molding stations, where they are discharged electrically by the tram operator.

The power presses and the impact press are automatically fed by means of carefully controlled belt feeders. The pressed brick are delivered from the press by means of standard pushers or mechanical pickers. The press operators set the standard sizes of brick directly on the tunnel kiln cars. This feature of direct setting, which helps workmanship by eliminating one handling, is an innovation built into the Windham plant. The larger and more intricate brick shapes are usually set on pallets, which are then placed on monorail-supported rack cars. Various special shapes, many of which are of extremely complicated design, are molded by hand.

Tunnel kiln cars containing undried brick are carried by means of transfer cars and gasoline-driven pushers to tunnel kiln car dryers, and are moved through the dryers in accordance with a pre-determined schedule. There is a kiln car dryer in line with each of the tunnel kilns. This facilitates the rapid movement of a car from the dryer into the entrance end of the kiln, with the minimum of temperature-drop. The dryers are supplied with clean hot air from the cooling zone of the kilns. A system of fans and ducts is arranged to insure the movement of the warm air throughout the complete cross section of the kiln car load. Indicating and recording instruments are used to observe the temperature and humidity conditions in the dryer.



A general view of the silica washing plant near the quarry.

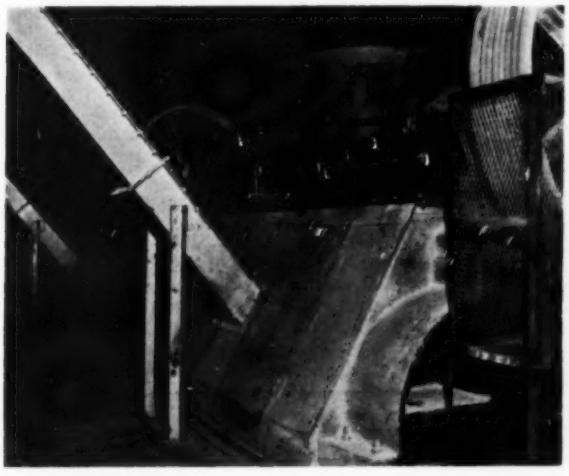
Rack cars bearing shapes to be dried are delivered by the monorail system to the rack car dryers, through which the cars are slowly and automatically pushed. After passing through these dryers, the brick are reset on cars for tunnel kiln firing, or they may be set directly in one of the two round periodic kilns for firing. The rack car dryers, like the kiln car dryers, are heated by hot air from the tunnel kilns. In addition, they are provided with a stand-by oil-fired Dutch oven.

The Windham tunnel kilns were completely designed by Harbison-Walker's engineering department personnel, which took full advantage of the experience gained in the operation of tunnel kilns at other company plants. The kilns are 567 ft. long, each holding 81 cars, and have a load cross section of 6 by 5 ft. Firing cycles may be varied to suit the required production. The kilns are equipped to burn heavy oil. Hot air at 700 deg. F. is obtained from the cooling zone of the kiln for use through the burners as combustion air. A double door and vestibule system is provided at the entrance of the kilns so that draft conditions and fuel-air ratio are not disturbed during the charging operation. Special provisions were made on the kilns to maintain uniform temperatures from top to bottom and from the sides to the center of the cars. The kilns were carefully insulated to prevent excessive heat loss by radiation from walls and crown.

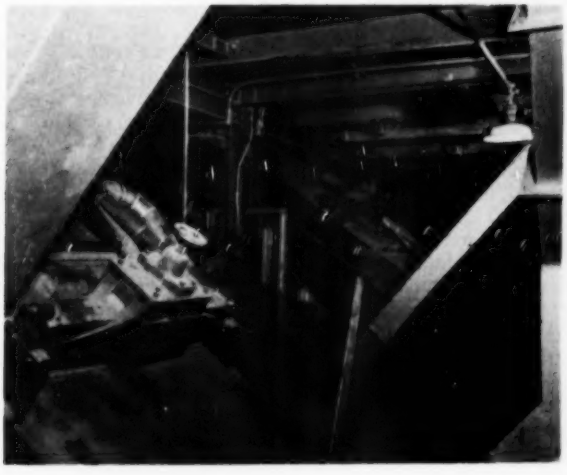
All kilns are provided with both thermocouple and radiomatic instruments for measuring temperatures. This instrumentation allows the operator to set up any desired firing curve within rather wide limits. It also permits close adjustment of individual burners, so that uniform heating conditions can be maintained. The train of cars in the kiln is under a continuous push. When each car reaches the end of the tunnel kiln, it is delivered by means of transfer cars and gasoline-driven pushers to the unloading tracks adjacent to the stock sheds.

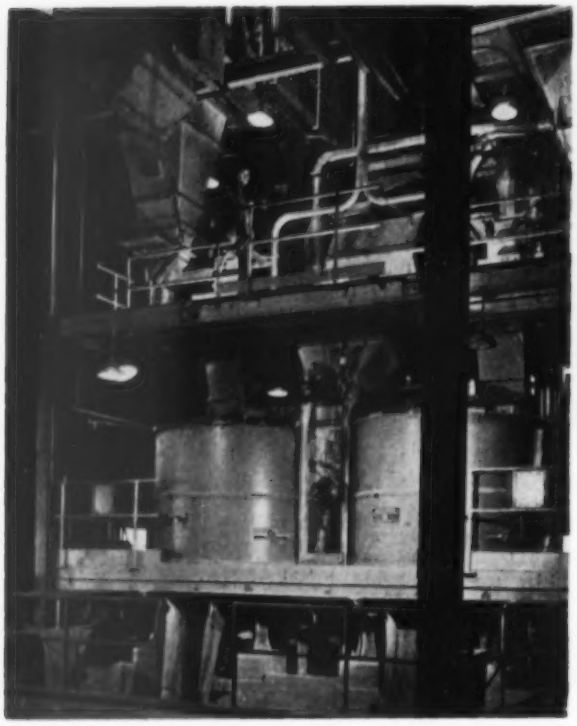
In the firing of silica brick, a per-

Two of the totally-enclosed dry-pan grinding mills used in the new plant.

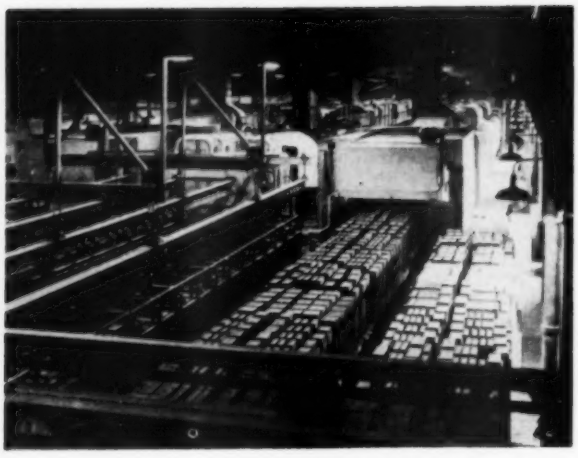


Screening units in the dry-grinding circuits. Note the piping for dust collection.





Left: A view showing two of the mixers (below) and tramrail buckets (above). Pipes on this level are for dust collection.



Above: Unburned brick entering the kiln car dryer (foreground) and monorail tracks (left) at the entrance end of the rack car dryer.

manent increase in dimensions occurs, altering the individual brick from the green or mold size to the fired size. This expansion amounts to about 15 percent by volume. It results from the transformation of the silica mineral quartz into other crystalline forms of silica. Completion of the expansion to the optimum degree requires extended time, as well as high temperature. This is the primary reason for the great length of the Windham tunnel kilns.

Two round periodic kilns were constructed for use in firing large and intricate special shapes, particularly certain by-product coke oven shapes. These kilns are oil fired. They were also completely designed by Harbison-Walker's engineering department.

The plant was laid out with the purpose of handling as high a percentage of palletized shipments as possible. The layout from the kiln car unloading stations through the stock shed and to the several means of shipping was all planned for pallet handling with lift trucks. In the design of the entire plant emphasis was placed on efficient material handling with lift trucks, as is evidenced by the one-level construction. There are no transfer pits and no depressed kiln car tracks, so that lift trucks may be used as needed throughout practically the whole plant.

It is apparent from the amount of enclosed equipment that great attention has been paid to dust control. The nature of the material handled —silica—is such that the dust problem required special consideration. The dust-collecting system is divided into two parts, one collecting from the raw material processing equipment, and one from the grinding equipment. Either system can be operated independently. To take care of general clean-up throughout the plant, portable high-vacuum units are used. These units are also used in cleaning the tunnel kiln cars. Up through the grinding tower a permanent piping system has been installed which is connected into the portable high-vacuum units when cleaning is being done on the upper floors. Eventually it is planned to carry a slight moisture in the material as received at the plant in an attempt to relieve a part of the load on the dust collection equipment. The dust collected is combined with the ball-mill product for later use.

At all stages of the manufacturing process samples are regularly taken for immediate testing in the control laboratory. A complete laboratory, competently staffed, does most of the testing, and the entire plant personnel is quality minded. Tests are run by the operators at each step along the production line. The tests made at Windham are supplemented by others conducted at the company's central research laboratory at Hays, Pittsburgh, Pa., where the refractories industry's first spectrographic laboratory is operated for control of impurities in "Star" and "Vega" silica brick.

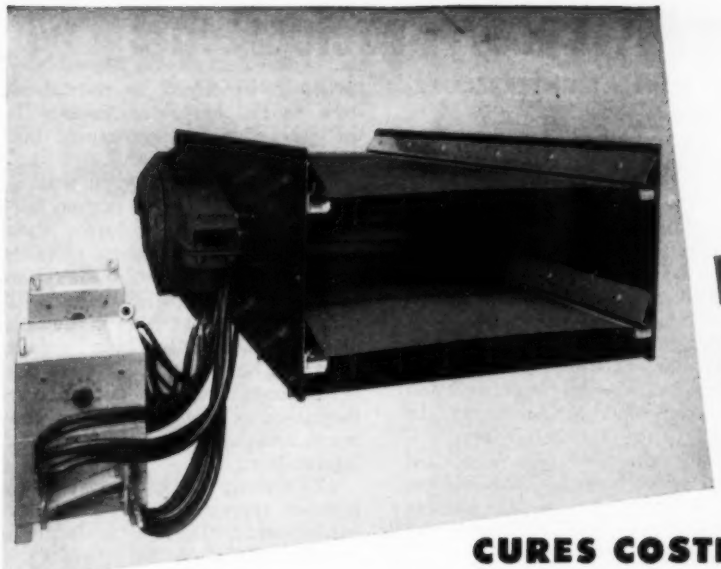
Inspection of the product and loading it for shipment by railroad car or motor truck are the final operations in the plant. The brick are packed, as required, in any one of several packing materials; or they are shipped on pallets, so that they can later be unloaded and handled by lift trucks; or they are crated for rail-and-water shipment to export trade.

Marquette's Annual Report Does It Again—Ninth Time

For the ninth consecutive year Marquette Cement Manufacturing Company won honors for excellence in annual reporting. The independent board of judges in the Financial World Annual Report Survey announced its finding that Marquette's 1952 Annual Report is best in the cement industry. The bronze "Oscar of Industry" trophy was presented to the company at the Annual Awards Banquet in the Grand Ballroom of the Hotel Statler, New York, on October 26.

Over 5,000 reports were considered in the international competition this year. These reports were judged in 100 industrial classifications for the "Best of Industry" awards. In the cement industry Lehigh Portland Cement Company was runner-up for top honors, while Lone Star Cement Corp. placed third.

A dramatic increase in sales was recorded by the National Gypsum Company for the first six months of this year. From a sales total of $46,366,499 for the January-June, 1952, period the figure rose to $57,598,945 in the comparable period this year. Earnings were $3,990,774 ($1.41 per share of common stock) in 1953, compared with $3,491,622 ($1.39 per share) last year.



HEATING NOT BEATING

CURES COSTLY SCREEN BLINDNESS

photo courtesy of Hewitt-Robins, Inc.

The practice of beating blinded screens, a temporary cure at best, runs up labor cost and causes excessive screen failure. Hanco Screen Heaters forever eliminate costly, inefficient sizing resulting from blinded screens.

SCREEN HEATING REDUCES SIZING COSTS

1. Labor cost is cut by elimination of cleaning labor!
2. Screen life is greatly extended for it is no longer damaged by manual cleaning!
3. Sizing is more accurate and faster for processing equipment can be operated at full capacity!

(Every Hanco installation has paid for itself in less than a year!)

EASY INSTALLATION ON ALL SCREEN MAKES

Hanco electric screen heaters are furnished as a complete kit—heater unit, lead cables, copper distribution and feed bars and skirt boards. All necessary small parts and complete instructions are included. Hanco units are designed to match original fittings. Speedy installation can be made by competent maintenance personnel.

HANCO QUICK-CHANGE ASSEMBLY

Available in five styles, Hanco quick-change assemblies assure easy cloth changes. Special skirt boards or tension rails incorporate a wedge type copper distribution bar that is bolted to but insulated from the rail itself. One of the five assemblies shown below is sure to fit your make of screen. Cloth changes are as easy or easier than on an unheated screen.

A-8074

HANCO SCREEN HEATER ADVANTAGES

1. Hanco heaters have a wide application for they heat brass, plain, stainless and monel steel screens.
2. Unique tap changing device allows screen temperature adjustment under load. This means added economy, for you can quickly adjust to seasonal or load demands.
3. Heater terminals are readily accessible for inspection or adjustment.
4. Compact heater units can be floor, wall or ceiling mounted.
5. There is always positive direct contact with the hook strip of the screen cloth.
6. All electrical contacts are shielded from abrasion.
7. Cloth changes are as quick and easy as they are on unheated screens.

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Report on Current Labor Developments

By S. HERBERT UNTERBERGER

S. Herbert Unterberger & Company
Industrial & Labor Economists
Washington, D.C. - Philadelphia, Pa.

AS LONG ago as September, 1949, two of the largest unions in the country, the United Automobile Workers, CIO, and the International Association of Machinists, AFL, entered into a no-raiding agreement whereby they agreed not to dissipate their efforts by trying to take members away from each other. That agreement, which was recently amended, establishes a model of decorum which could be followed with profit in all union *vs.* union and union *vs.* management relationships.

For example, the agreement requires that:

"Where the unions hereto are both engaged in an organizing activity among employees of a plant, special care will be given not to impugn the motives or attack the character of either union, its offices thereof, its officers or members."

Then there follows this mutual affirmation of faith:

"Both the UAW-CIO and the IAM have contributed in a large measure to the security, happiness, and dignity of their members and their families and to the strength of American democracy. Both have made records of outstanding achievement in the trade union field. Both unions have won universal recognition and public acclaim for the social and moral responsibility they have demonstrated on broad public issues affecting the public welfare. Both have maintained high democratic and ethical standards and have excluded from leadership and influence communists, racketeers, and other un-American and anti-social elements."

After this passage the following statement is made:

"In view of this enviable record it will be considered a serious breach of good faith and ethical practices and a violation of this agreement for either party or its representatives to use, directly or indirectly, any propaganda alleging or inferring communism, racketeering, company-unionism, back-door dealing, racial prejudice, unwarranted or unnecessary strikes, excessive initiation fees, dues or assessments in an effort to discredit the other party for the purpose of gaining organizational advantages."

In its closing sections, the no-raiding agreement contains the following example of "noblesse oblige":

"The agreement is entered into in good faith, and neither organization shall resort to any manipulations whatever for the purpose of evading any of the provisions herein. Where representatives of either organization commit willful violations of the spirit and intent of this agreement, the international president of the offending organization will be notified and will take proper action as may be merited in the case before him."

Because the agreement is couched in such polite language, it should not be assumed that they are merely pious statements of intention not really meant to be enforced. In addition to the affirmations of mutual respect, the unions agree not to raid each other's membership as follows:

"Where one of the named organizations has established a *bona fide* contractual relationship with an employer . . . the other organization shall not in any way interfere with the relationship by having its officers, representatives, or members solicit or accept membership applications or authorization cards or cause to promote campaigns of any nature designed to disturb such relationship."

"The parties hereto will not aid or encourage other . . . unions . . . to attempt jurisdictional raids upon plants under *bona-fide* agreement with either of the parties hereto. . . ."

The positive advantage of this agreement to an employer whose workers are organized by either of these unions will be fully appreciated by every employer who has been caught in the cross-fire between unions trying to raid each other's membership. Few things are more devastating to employee morale or productivity. Production frequently stops completely because of strikes.

The two unions mentioned above not only promise not to engage in raiding tactics, which is a benefit to their employers; they also agree to help support each other in their struggles with employers. This means that the employer will be confronted with a more formidable adversary.

For example, if an employer relocates his plant or business in another section of the country, these two unions agree that:

". . . each union will assist the union affected by such run-away tactics in its efforts to re-establish itself as the bargaining agency in the new plant or property of said company or corporation."

Furthermore, they agreed that:

"To strengthen their mutual bargaining position and to further their efforts to establish uniform contract provisions and to remove labor as a competitive factor in dealing with corporations that have multiple plants organized by both unions, there will be:

(1) an exchange of complete information of plants, locations, contracts and wage rates, and related information;

(2) calling of joint conferences between representatives of both organizations to be held in localities and on dates mutually agreed to;

(3) joint negotiations conducted with such corporations whenever such a course promises to bring the best possible results for the membership of both unions."

Finally, the agreement provides that:

"Whenever one of the unions here involved is engaged in strike action against an employer with whom the other union is also recognized as a bargaining agency . . . it is agreed that each will give all possible support to the other by:

(1) joint economic action against the said employer whenever possible;

(2) respecting authorized picket lines and rendering all lawful and moral support and assistance; and

(3) making no settlement with the employer which will in any way undermine or weaken the position of the striking union."

Should such no-raiding, mutual-assistance agreements become widespread, their operation would materially strengthen the unions' bargaining positions. This situation is not far off. An overall no-raiding agreement between the top organizations, the American Federation of Labor and the Congress of Industrial Organizations, which, presumably, would be binding upon all their affiliates, has already been approved by the recent AFL convention. It will be presented to the forthcoming CIO convention, where, from present indications, it will also win approval.

The Deerfield Beach Rock Corporation, recently formed by R. H. Wright and Son and B. F. Snyder, has begun operations at a new plant near a quarry formerly owned by D. S. Pruitt, Deerfield Beach, Fla. The same corporation owns the Hallandale Rock Corp., Hallandale, Fla.

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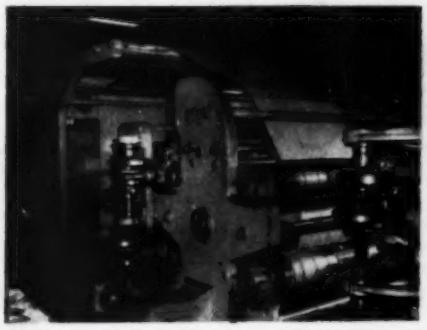
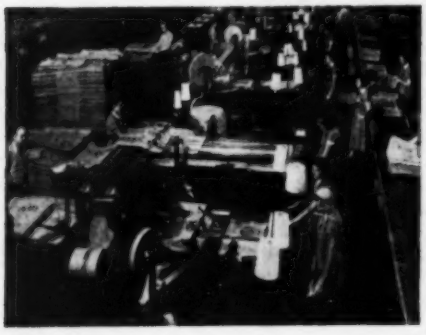


Photo at right shows V-C engravers making printing plates. Well-designed, expertly printed bags have real sales appeal – put your product out front. Photo above shows one of V-C's multi-color printing presses.



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Sintering of Shales to Produce Lightweight Aggregate for Concrete

By W. C. SCOTT JR.*
Tennessee Valley Authority
Wilson Dam, Alabama

AS part of its program directed toward the improved utilization of minerals in the Tennessee Valley area, the TVA has conducted studies of the utilization of shales for the production of lightweight concrete aggregate. These studies have resulted in the development of a sintering process for the production of lightweight aggregate. The process was adapted from one developed earlier by TVA for the thermal agglomeration of phosphate sands to be used as charge to phosphorus electric furnaces. This paper describes the work done in the development of this process and gives the results obtained with several types of shales.

Shales Tested Most of the work was done with Rome shale, a noncarbonaceous material from the Rome formation, and with Briceville coal-mine shale. Typical chemical analyses and physical properties of these materials, which were obtained from locations within a 50-mile radius of Knoxville, Tenn., are shown in Table I.

The variables investigated were moisture content of charge, depth of charge bed, proportion of recycled fines, and proportion and type of fuel. These variables had been found to affect the rate of production of sinter in the work with phosphate sands.

Method of Evaluation The gross product from a sintering test was screened to remove the minus ⅜-in. fines, which were considered to be "underburned", and the sinter cake was crushed to minus ⅜-in. for determining the bulk density of the product as it would be used. The weight of the product was considered satisfactory if its bulk density did not exceed 50 lb. per cu. ft. The tests were evaluated on the basis of net production rate of satisfactory aggregate. The minimum rate considered acceptable was 90 lb. per hr. per sq. ft. of grate area. The final evaluation of the product was based on the satisfactory use of the material as an aggregate in concrete blocks.

Equipment and Test Procedure A single-pallet, downdraft sintering machine (Figures 1 and 1a) was used in these studies. The machine had a pallet area of 2.8 sq. ft. and a pallet-box depth of 12 in. The auxiliary equipment included an ignition hood, a gas burner, an exhaust-gas cooling tower, and an exhaust gas blower. The ignition hood was used in conjunction with the gas burner to facilitate the uniform ignition of the charge. The exhaust gas was cooled with water in a packed tower to prevent the blower from becoming overheated. The flow of cooled gas was measured with an orifice meter and regulated with a damper in the duct between the cooling tower and the blower.

The charge to the sintering machine consisted of pelletized mixtures of raw shale, underburned fines from a previous run, and fuel if required. In preparing the charge, the raw shale first was crushed to minus ⅜-in. size in a jaw crusher, and then was mixed and pelletized with the underburned fines and a predetermined amount of water in a concrete mixer. The mixer had a capacity of 3 cu. ft. and revolved at a speed of 20 r.p.m. Mixing and pelletizing was done in 10 minutes. If the shale did not contain enough carbonaceous matter to support combustion, coke was added during the latter part of the mixing and pelletizing period.

Pellets were charged to the sintering machine so that the larger pellets were below the surface of the bed. The charge was ignited by burning carbon monoxide gas with about 100 percent excess air just above the surface of the bed. During the ignition period a hood was placed over the pallet to promote uniform ignition of the charge. The flow of air through the bed was maintained at 90 cu. ft. per minute during the ignition period and was increased to about 220 cu. ft. per minute when the bed ignited. A test was considered completed after the charge on three-fourths of the grate was, or had been, at a red heat. If the charge was not sintered in 16 minutes, the test was stopped.

Tests with Rome Shales The moisture content of Rome shale charges had a pronounced effect on the sintering rate. The optimum moisture content was found to be 10 percent (Figure 2). As the moisture content was decreased below 10 percent to about 5 percent, the sintering rate decreased slowly. When the moisture content was increased above 10 percent, the sintering rate decreased rapidly; and at 11.6 percent the charge was too wet to ignite and sinter in the prescribed time limit.

No appreciable effect on the sintering rate was observed when the depth of the sinter bed was varied from 2¾ to 11¾ in.

The proportion of recycled underburned fines in the charge was varied from 0 to 50 percent of the shale charged. Within the range of 11 to 50 percent, the proportion of fines in the charge did not affect the sintering rate appreciably. It was concluded, therefore, that the fines should be recycled at approximately the same rate as they are produced.

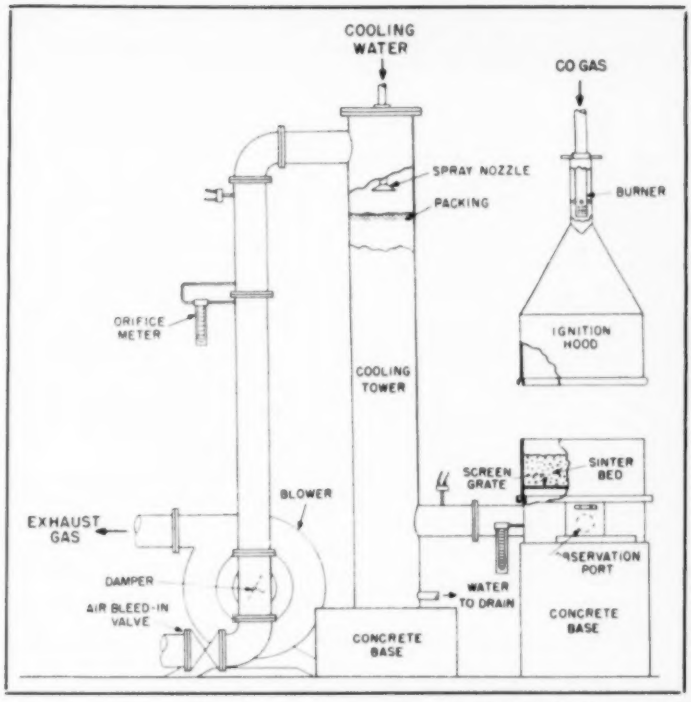
The proportion of metallurgical coke (87 percent fixed carbon) in the charge was varied from 3.2 to 11.8 percent of the total charge. The optimum proportion of coke was determined to be 4.3 percent (Figure 3). Beehive coke screenings (60 percent fixed carbon) also were used successfully as fuel. The same quality

*Presented at the October, 1951, Southwide Chemical Conference sponsored by the American Chemical Society and the Southwide Association of Science and Industry.

TABLE I—Chemical Composition and Physical Properties of Shales Used in Small-Scale Sintering Tests

Shale	Percent (Dry Basis) SiO_2	Al_2O_3	Fe_2O_3	CaO	TiO_2	Total C	CO_2	K_2O	Ignition Loss	Bulk Density[1] of −¾ in. Raw Shale[2] lb./cu. ft.	Screen Size Percentage[2] −¾ in. +6 mesh	−6 mesh
Rome-1	76.0	10.3	5.0	0.0	—	—	—	7.0	0.8	90	43.5	56.5
Rome-6	63.0	15.8	8.0	0.5	0.6	—	—	—	3.7	93	34.5	65.5
Fresh coal mine	53.5	19.8	7.7	0.7	—	4.3	0.8	—	11.1	96	37.9	62.1
Weathered coal mine	48.6	21.2	5.6	0.4	—	8.4	0.1	—	17.9	71	28.7	71.3

[1] Poured weight; not rodded.
[2] After crushing.



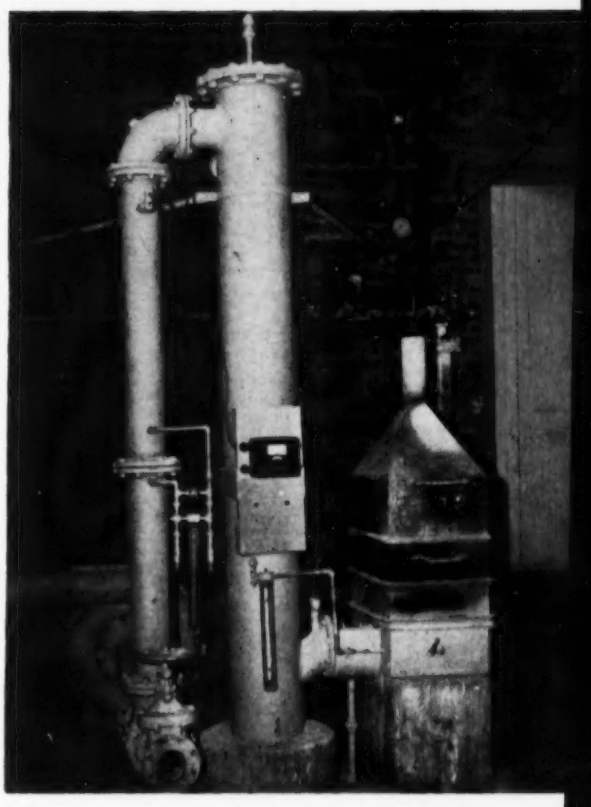


Fig. 1 (left)—Side view of the experimental sintering unit.
Fig. 1A (right)—A photograph of the pilot sintering unit.

of sinter was produced at aproximately the same rate with the beehive coke as with the higher grade coke when an equal quantity of fixed carbon was supplied.

The bulk density of the crushed sinter (−3/8 in.) from Rome shale was about 49 lb. per cu. ft.

Results of Tests with Coal Mine Shales The successful sintering of coal mine shales was dependent chiefly upon the carbon content of the charge. The carbon content of freshly mined shale (4.3 percent) was too low; this shale did not sinter satisfactorily, either alone or mixed with underburned fines, unless about 1 percent of coke (87 percent fixed carbon) was added to the charge. The carbon content of weathered shale (8.4 percent) was too high; however, this shale could be sintered satisfactorily when mixed with underburned fines to reduce the carbon content of the charge to 3.5 percent. Mixtures of weathered and fresh shale sintered at a satisfactory rate when the carbon content of the charge was in the range of 2.4 to 3.5 percent. The difference in the amounts of carbon required for successful sintering of the various charges is believed to be caused by the different quantities of carbon on or near the surface of the charge pellets.

The moisture content of the raw coal mine shale samples was approximately 2 percent (as received).

The effects of moisture content of the charge and of depth of bed on the rate of production were investigated, using charges containing 75 percent coal mine shales (3 parts weathered shale to 1 part fresh shale) and 25 percent fines (crushed sinter). The optimum range of moisture content was 11.8 to 14.7 percent (Figure 4), and the net sintering rate was about 160 lb. per hr. per sq. ft. of grate area. When the moisture content was within the optimum range, the proportion of underburned fines produced was about the same as the proportion of fines in the charge.

The sintering rate decreased from 139 to 61 lb. per hr. per sq. ft. as the depth of the bed was increased from

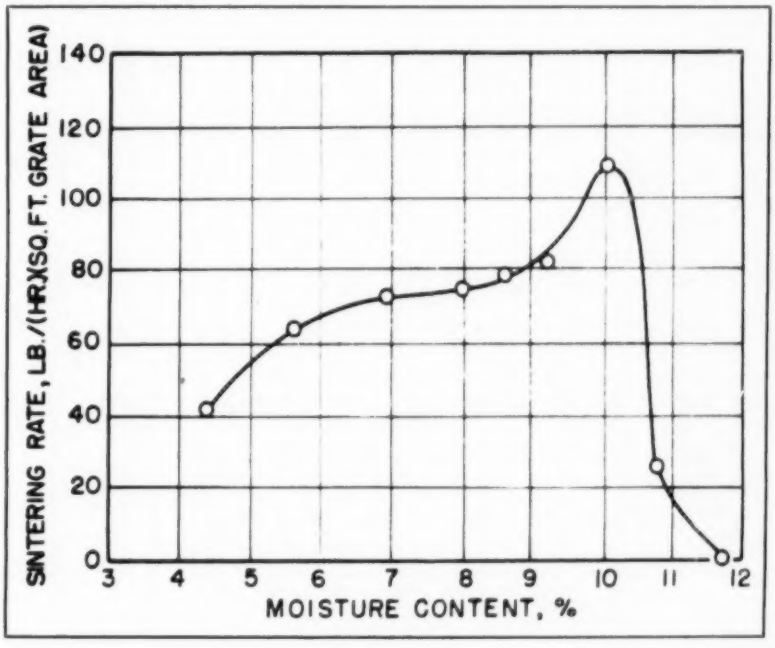


Fig. 2—Effect of moisture content of charge on sintering rate of Rome shale.

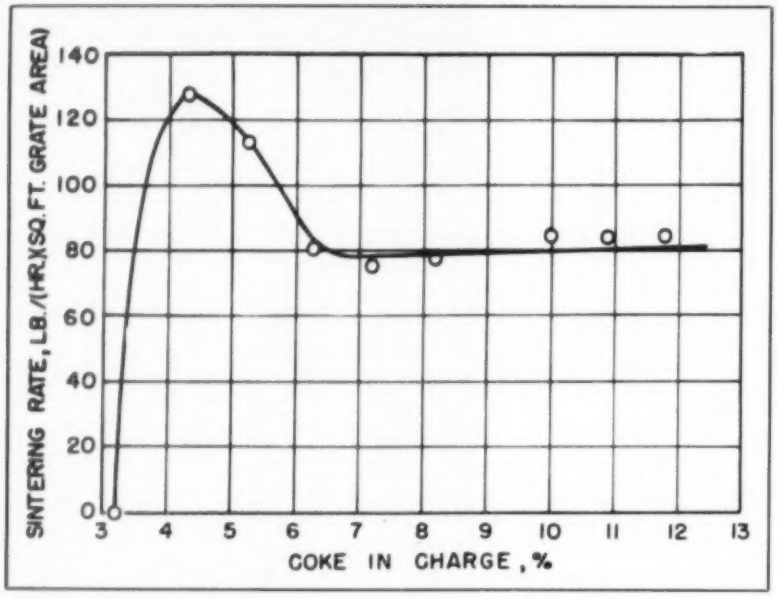


Fig. 3—Effect of metallurgical coke (87 percent F.C.) content of charge on sintering rate of Rome shale.

3¾ to 11¾ in. (Figure 5). A 5-in. bed was considered optimum since it gave a higher proportion of usable sinter than the 3¾-in. bed, and the sintering rates were about the same.

In general, the coal mine shales sintered at higher rates than the Rome shales and had the added advantage of requiring little or no added fuel for successful sintering. The bulk density of the crushed sinter (−⅜ in.) from coal mine shales ranged from 38 to 45 lb. per cu. ft.

Concrete Blocks Made from Sintered Shales Standard 8- by 8- by 16-in. concrete blocks were made with commercial equipment by two block producers; different proportions of aggregate and cement were used. The manufacturers determined the quantity of water used in mixing the concrete by observation. Usually, about 70 percent of the total quantity of water used was added to the aggregate prior to the cement addition. The blocks were tested in the laboratories of the University of Tennessee and of the Volunteer Portland Cement Company in Knoxville. The results, which are presented in Table II, indicate that sintered Rome and coal mine shales were excellent aggregates. When the ratio of cement-to-aggregate was in the range 1:10 to 1:15, the blocks exceeded A.S.T.M. compressive strength specifications for grade B blocks (700 p.s.i.); blocks made from two of the mixtures exceeded A.S.T.M. specifications for grade A blocks (1,000 p.s.i.). The weights of the blocks

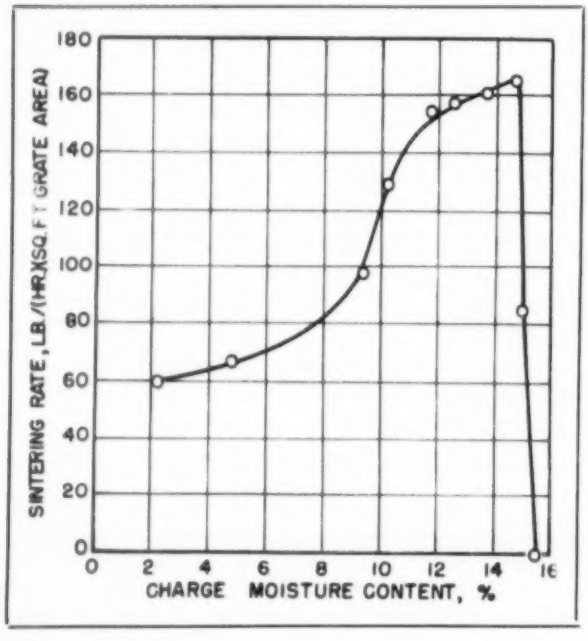
(*Continued on page 116.*)

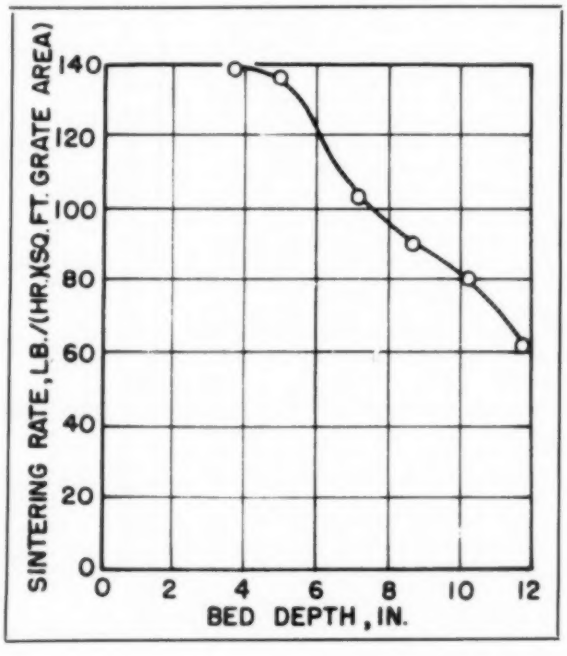
TABLE II—Yield and Strength of Blocks[1] Made with Sintered Rome and Coal Mine Shales

Aggregate	Proportion of Cement-to-Aggregate by Volume	Yield Blocks/Bag Cement	Weight of Block[2] lb.	Block Strength,[3] lb./sq. in. of Gross Area	Absorption (Percentage)
Rome	1-10	26	30.3	958	9.9
Rome	1-12½	32	28.9	758	11.3
Rome	1-14	37	28.8	739	11.2
Rome	1-15	40	28.4	786	11.4
Coal mine	1-10	25	25.9	985	—
Coal mine	1-12½	27	26.5	1037	—
Coal mine	1-15	34	26.7	1022	—
Commercial expanded blast-furnace slag	1-14	22	30	—	—
Air-cooled blast-furnace slag[4]	1-8	23	38	710	—

[1] Blocks were steam cured at atmospheric pressure for 24 hours.
[2] Blocks air-dried 3 days before weighing.
[3] Blocks aged 28 days.
[4] Bulk density of aggregate was 98 lb. per cu. ft. (−¾ in.).

Fig. 4 (left)—Effect of moisture content on sintering rate of coal mine shale.
Fig. 5 (right)—Effect of depth of bed on sintering rate of coal mine shale.





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CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. **NEWEST OF ITS BREED.** Said to be the first entirely new design in crawler prime movers in over 20 years, the new *Eimco* 105 tractor-loader has many new features for better heavy-duty loading, among them an unusual transmission arrangement.

2. **LONGER BEARING LIFE** results from a new internal design that increases the capacity of *SKF* spherical roller bearings 25 to 50 percent, says this 14-page booklet, explaining the change and presenting tables to show its superiority over the older type.

3. **MAINTENANCE STEELS** for build-up and replacement are shown in this 16-page brochure about *Pyrco* grouser steel, applicator bars, shafting, wear plate, heat treated alloys and non-tempering steels. Technical data include handy weight-per-lineal-foot tables for various steel stock.

4. **NEW THROTTLE CONTROL.** Developed by *Link-Belt Speeder* for shovels, drill rigs, dozers, etc., this step-less control can be mounted anywhere a governor rod or cable can be attached.

5. **HYDRAULIC PULLERS** for shafts, king pins, etc. are among the Power-Twin center hole units, 17½ to 50-ton sizes, shown in this 24-page *Owatonna Tool Co.* catalog. Adaptor plates for various tractors, trucks and engines are listed, and several power presses for shop duty are shown.

6. **SILICA SAND RECOVERY** by flotation is described in this *Denver* flowsheet study of the production of a low-iron glass sand for optical requirements.

7. **CLAMSHELL BUCKETS** feature this 24-page catalog of *Industrial Brownhoist* rope reeve, power wheel, special purpose, open type grab and link-type buckets for every handling need.

8. **WOVEN WIRE SCREENS** made by *Twin City Iron & Wire* are featured in this 30-page TC catalog, chock-full of wire cloth data.

9. **BOTTOM DECK FEED,** a patented principle of aggregates production, is described in literature devoted to *Pioneer's* new duplex gravel plants. Color diagrams trace the flow of materials through the seven sizes in the line.

10. **A PLATFORM SCALE,** adaptable for either batch weighing or continuous process control, is described in this *Weighing Components* bulletin on the recently developed W/C pneumatic weighing scale, built in seven capacities (to 3000 lb.).

11. **HOISTS** for lifting and pulling jobs are shown in this 8-page full-line catalog from *Coffing Hoist.* Over 100 different portable hoists, manual and electric, and several pullers and maintenance tools are shown.

12. **FIRST AID KITS** featuring an all-weather case, the latest quality control methods and improved packaging, are described in this *Mine Safety Appliances* bulletin. Made in several sizes, the kits are fitted with the first aid items needed for your plant.

13. **DUCTILE IRON** for castings is discussed in this *Howard Foundry* bulletin, presenting all the details and data you need to contemplating its use.

14. **"POWER AND PROFIT"** tells, among other things, how *Caterpillar* rates its diesel engines and electric sets. The 8-page illustrated booklet may be obtained in English, Spanish, French or Portuguese.

15. **AIR OR LIQUIDS** can be controlled by the hermetically-sealed, corrosion and vibration-resistant Detect-A-Flo, a unit that represents an entirely new approach to the control and detection of air flow and liquid level, this *Fenwal* literature says. Weighing less than a half-pound, the unit requires no maintenance.

16. **BATTERY RED BOOK.** Users of storage batteries for cycle service in industrial trucks, mine cars, materials handling equipment, etc., will welcome this revised 60-page sixth edition of *Gould-National's* free handbook of lead-acid batteries.

17. **CENTRIFUGAL PUMPS** of the self-priming category, made by *Rice-Pump & Machine,* are featured in this literature. Shown are electric and gasoline, stationary and portable units with capacities up to 40,000-gph.

18. **DUSTLESS BRUSHING** without a sweeping compound is described in this leaflet from *Milwaukee Dustless Brush Co.* Shown also are Speed Sweep brushes for floor use and truck washing.

19. **VARIABLE SPEED DRIVE.** The new *Reeves* Flexi-Speed drive, "the most versatile, most economical ever built," described in this bulletin, converts any standard constant speed motor to an infinitely variable speed drive with speed ratio up to 8:1.

20. **ROPE CLAMP & THIMBLE.** Reduce down time as much as ⅗ and install in a third the time, a unit that develops 85 to 90 percent of ultimate rope strength, urges this bulletin on the *Newco* two-piece wire rope clamp & thimble.

21. **CRANE-EXCAVATOR** selection data fills this handy vest-pocket size pamphlet issued by *Wayne Crane.* It gives step-by-step the various components of crane-excavators that you should consider in selecting your next machine.

22. **MODERNIZE WITH RADIO.** Details you need to know on how 2-way radio can be put to work and what it

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can perform are included in this *G. E.* brochure. Besides showing the advantages, it gives average 2-way radio cost, FCC regulations, etc.

23. **GEARED FLEXIBLE COUPLINGS.** Light weight and high capacity are combined to make an ideal power transmission medium for high speed and high torque applications, says *Link-Belt.*

24. **CONVEYOR BELT WEIGHING.** Continuous weighing of a steady-flow of loose material on a conveyor belt, and recording the rate of flow and tonnage, using the *Trans-Weigh* belt-meter, is described in this *Honeywell* data sheet.

25. **PERFORATED METALS** for every industrial application, including materials screens and sieves and protective guards for machinery, are shown in this comprehensive 32-page *Diamond Mfg. Co.* catalog.

26. **METHODS OF HARDFACING,** their selection and evaluation — a 12-page reprint of an article from Welding Journal — is being offered by *Air Reduction.* Special emphasis is given the inert-gas-shielded arc process.

27. **TRACTOR** in two gauges, 60 or 74-in., with diesel power, 66 drawbar hp. 76 belt hp., 18,700-lb. drawbar pull, 5 forward and 4 reverse speeds, and finger tip steering is described in detail in this 32-page *Caterpillar* brochure on the D-6.

28. **VACUUM CONVEYING** with the Vacu-Veyor cuts bulk materials handling costs, says this leaflet from *Vacu-Blast,* describing and diagramming the operation of this new, versatile system for fixed or portable installations.

29. **AIR-COOLED KILN END.** Designed to keep the discharge end of kilns cool, round and rigid, this *Allis-Chalmers* unit pays for itself many times over in fuel, refractory and downtime savings, says this bulletin.

30. **"WHAT'S THE DIFFERENCE"** asks *Laschen* in this new brochure designed to answer questions that may be in the minds of wire rope users.

31. **AS NEW AS TOMORROW!** The recently announced *GE* Tri-Clad "55" line of electric motors, built in 1-30 hp ratings to the latest NEMA dimensions, are described in full-color picture-story bulletins.

32. **PYROMETER DATA.** Based on the revised Bureau of Standards data, this new issue of *Bristol's* "Pyrometer Thermocouple Calibration Data" features tables corrected to the absolute volt and to the Intl. Temperature Scale of 1948.

33. **STOP SHUTDOWNS!** Good maintenance is prevention *not* repair, this *Magnaflux* brochure points out, describing electronic devices for detecting failures "before they occur" in the critical parts of machines and equipment.

34. **HEAVY-DUTY BODIES** built with Twin Arm hydraulic hoists for mounting on your trucks are shown in this *Heil* bulletin.

35. **VALVE BAG PACKER** and settler is described in this *Black Diamond* folder.

36. **HEATING EQUIPMENT.** Tank car heaters, bituminous boosters, peak-temp oil boosters, and mobile, portable and stationary boilers are shown in this *Cleaver-Brooks* bulletin.

37. **DROP BALLS.** Semi-cast steel drop balls in sizes from 500 to 8000-lb. are described in this *Frederick Iron & Steel* leaflet.

38. **SHAKER CONVEYORS.** Metal trough shaker conveyors build by *Goodman Mfg.* are shown in this 4-page bulletin.

39. **LONG RANGE HANDLING** of materials, with drag scraper, slackline cableway, and tautline cableway is graphically shown in this *Sauerman* bulletin. Typical installations are described, with operational and maintenance advantages over other forms of handling.

40. **DREDGES.** Hydraulic, dipper and clamshell dredges are described in detail in this recently issued 16-page *American Steel Dredge* brochure.

41. **DURABLE GLOVES** for every pit and quarry duty are shown in this *Riegel* bulletin describing "Plastic Dot" gloves which wear longer to cut your glove costs over 40 percent.

42. **MORE AIR FOR LESS FUEL.** Air compressors made by *Davey* in 315, 500 and 500-cfm models are shown in this brochure about the Super Chief line. Skid trailer and 4-wheel mountings are available.

43. **DIAMOND CORE DRILLING** equipment made by *Sprague & Henwood* features this 4-page bulletin. Shown are air powered machines for boring ⅞- to 1⅝-in. cores as deep as 500-ft.

44. **CRANES & SHOVELS.** An unusual information bulletin in the form of a newspaper has been published by *Schield Bantam* to highlight its new ⅜-yd. 5-ton model C-35 and the all-new, specially-designed Crane Carrier built to mount the new T-35 truck-mounted Bantam.

45. **LIME HYDRATION.** The Knibbs Continuous Hydrating Process is discussed in this 12-page *Holbeck Corp.* brochure. This process requires only a minimum of labor to operate a pressure plant, the treatise points out.

46. **DRILL STEELS** are discussed in this 20-page *Bethlehem* brochure, which devotes a special chapter to ultra-alloy steels. Instructions for both working and using the steels feature the presentation.

47. **MAXIMUM TRACTION.** Medium-duty trucks with rated capacities of 11,000 and 15,000-lb. have maximum traction for off-highway work this *International* brochure says, describing the new I-H 4-wheel drive models.

48. **LEVEL CONTROL.** An electronic device for low-cost control of liquids, granular and bulk solids, the Tektor, is described in this *Fielden* bulletin.

49. **DEVELOPMENTS** in the electric precipitation recovery of dusts, fly ash, fumes, etc. are covered in this new 40-page *Western Precipitation* booklet. The latest advancements in Cottrell Precipitator equipment and details of combination mechanical-electric systems are included.

50. **ROLLER CHAIN WHEELS** with taper bushings, available from stock, are described and catalogued in this 16-page *Link-Belt* catalog.

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"COMPLETELY PLEASED" WITH HIS ALL-CAT* QUARRY

This flagstone quarry at Amazonia, Mo., is entirely Caterpillar-powered. The 1½-yd. Link-Belt Speeder and 500-ft. Gardner-Denver compressor in the illustration are driven by Caterpillar D13000s. Also on the job are a track-type D8 Tractor and two rubber-tired DW10s. This Cat team produces 2250 tons in a nine-hour day, 24 days a month, for a naval ammunition depot.

George W. Kerford Quarry Co. is the owner. Al Larson, superintendent, explains his company's standardization this way: "I know Cat machines are good, and I'd never think of changing from a product I'm completely pleased with."

Many quarrymen find that it pays in cold cash to standardize on Caterpillar equipment because it stays on the job. Standardization pays in other ways, too: in increased operator familiarity and efficiency, and in a single, reliable source for parts and service. That source is your nearby Caterpillar Dealer, who has factory-trained mechanics and a full line of genuine Caterpillar parts.

All Caterpillar Engines deliver full power on money-saving No. 2 furnace oil. Whether idling or fully loaded, they don't foul up. Leading manufacturers can supply these tough, quality-built Diesels in their equipment. Or your Caterpillar Dealer can install them when you repower. 12 sizes of engines and electric sets are available up to 500 HP and 315 KW. Ask your dealer about the units that are best suited to your needs.

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SPECIFY CAT POWER FOR HIGH-PROFIT PRODUCTION

Calcium Carbide Producer Enters Agstone Field

another ON THE SPOT report

THE Pacific Carbide and Alloys Company of Portland, Oregon., is an important consumer of high-grade pebble lime in the production of calcium carbide. Originally the company purchased its burned-lime requirements. Then

By HARRY F. UTLEY

some years ago it acquired the limestone deposit, quarry, and plant at Enterprise, in Wallowa County, Oreg., installed two Ellernan calciners (and later a third) at Portland, and has since produced its own lime.

When the Portland lime plant was described earlier (PIT AND QUARRY, September, 1947, and February, 1952) the kiln hoppers were being charged by clamshell crane. Recently the charging system was mechanized by installing a bucket elevator which feeds from the track hopper to a horizontal belt running above the calciners. The belt is movable to allow any of the kilns to be loaded. At the same time a Simplicity screen was placed in the circuit to wash the stone and reject any plus 1½-in. or any minus ½-in. stone before it could be burned. Any over- or under-size stone is incidental to rail haulage since the raw material is crushed and screened to size at Enterprise before it is shipped.

Another interesting new development at Pacific Carbide is the entrance of the concern, through an affiliate, Greely Lime Company, in the agricultural limestone business. Since no minus ½-in. lime is wanted for carbide production and since considerable quantities of small stone had accumulated as waste at Enterprise, this was a logical development. About one ton of small stone is screened out for each four tons of desired carbide-lime rock at the quarry. This minus ½-in. stone, plus a small accumulation from the Simplicity screen at the Portland plant, is now ground to 90 percent through 10-mesh and 30 percent through 100-mesh at the Portland plant by a Lippmann hammermill. The fine stone is delivered and spread on farm land within a 50-mile radius of Portland by a fleet of five Baughman and New Leader spreader trucks. Shipments are weighed before leaving the plant on a newly-installed Fairbanks scale.

While the Enterprise stone is of a very high grade, averaging 96 percent calcium carbonate, it contains about 1½ percent carbon and graphite, which tends to give it a dark gray to black appearance, quite in contrast to most agstone available in Oregon. The dark color caused some sales resistance at first from the growers until they learned of the high analysis and fine grind of the stone and found that it had exceptional soil-sweetening ability and was readily available after spreading. Now the demand often exceeds the supply. The grinding plant has a capacity of 40 t.p.h. but seldom operates at more than half this capacity.

The cement industry will be represented on the Committee on Industrial Relations of the National Association of Manufacturers by MAX A. KOFFMAN, vice-president and treasurer of Southwestern Portland Cement Company.

Three lime calciners at the Pacific Carbide and Alloys Company, Portland, Oreg., with the new charging conveyor above. The agstone plant is at the left.

Below: This hammermill grinds the waste stone to 90 percent through 10-mesh.

Below, right: One of the five spreader trucks which deliver and spread agstone within a 50-mile radius of Portland.

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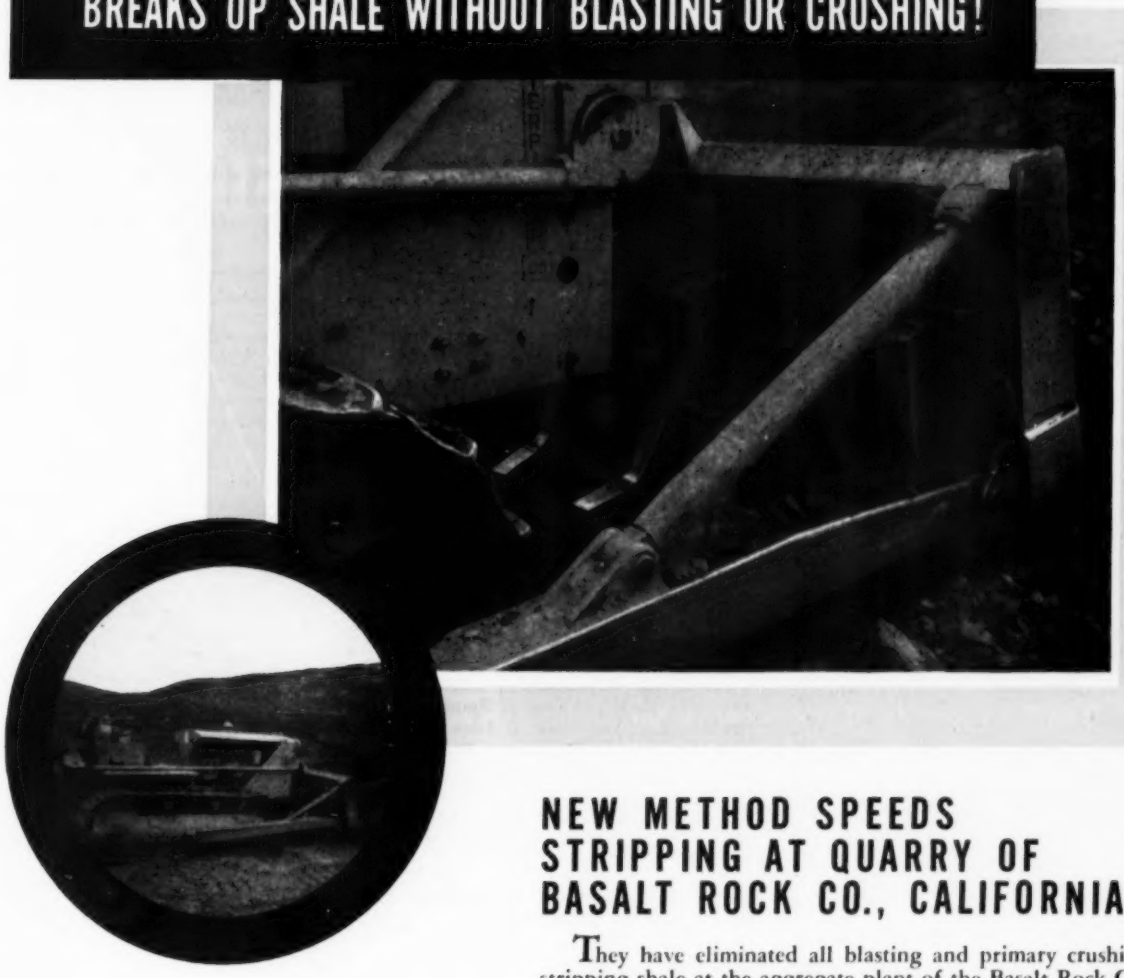

Preco Back-Rippers automatically rip as the tractor backs up . . . then ride on top of the ground as the tractor moves forward. They also can be pinned up out of the way. In addition to stripping operations, they speed up all dozing work — road building and maintenance, pioneering, mining, excavation and for push loading scrapers.

NEW METHOD SPEEDS STRIPPING AT QUARRY OF BASALT ROCK CO., CALIFORNIA

They have eliminated all blasting and primary crushing in stripping shale at the aggregate plant of the Basalt Rock Co., at Napa, California. Preco Back-Rippers, mounted on the reverse side of the moldboard of the Company's Caterpillar D-8 Tractors, do the complete job of breaking up the raw shale into pieces small enough to feed directly into the hammermill. This new method saves the company both time and money. The stripping job is materially speeded up while the company has eliminated the expense of other costly equipment.

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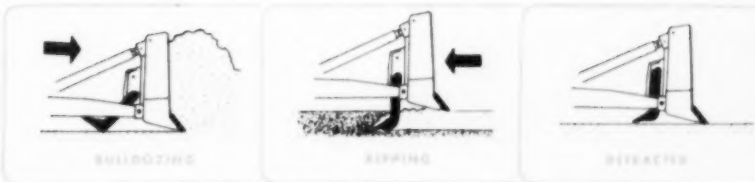

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Preco Back-Rippers are available for "Caterpillar" models including straight blade, angling blade and U-blade bulldozers.

Don't Delay Repairs On Conveyor Belting

IN ORDER to get the maximum service life out of conveyor belting, industrial users should take particular care to repair all belt damage as soon as it is discovered, according to Newell Perry, belting engineer, Thermoid Company.

Belt fabric exposed to weather will absorb moisture if the protective cover is damaged, and may even become soaked. In warm weather this condition leads to mildew and rot; in winter ice crystals may gnaw at the fabric from within as the belt flexes. Thus, immediate repairs not only prevent the spread of damage, with its threat of premature failure, but also keep out the water which is the natural enemy of any conveyor belt.

The simple tools and procedures outlined here will help the maintenance man to give belting proper attention. An adequate repair kit includes sharp cobbler's knives and a stone to keep them sharp, emery cloth, rubber cement, inner tube patching rubber, rip plates, and standard belt fasteners and accessories, together with rags and gasoline for cleaning. As each belt is installed, remnants should be kept, because they will prove useful in subsequent repairs.

To mend long, deep cuts which go through the fabric, it is recommended to open the cut, clean out all dirt, and cement the cut closed, allowing the cement to dry thoroughly before the belt is restored to service. Where bits of torn cover leave exposed spots with only slight damage to the fabric, remove the loose ears of cover stock by carefully cutting a curved and bevel-edged area around the spot; then sand the edges, apply cement, allow it to dry, apply tire patching rubber, and finally skive the patch flush with the belt cover.

Where gouges have penetrated the belt, or longitudinal rips have occurred, these points must be cleaned, sanded, cemented, and reinforced with rip plates at 3-in. intervals. Transverse rips require similar treatment with standard belt fasteners instead of rip plates. Use rip plates on longitudinal rips only, and standard fasteners on transverse rips only. When holes in the belting do not permit the simple use of rip plates and fasteners, cut out the hole into the smallest possible rectangle with its sides paralled to and at right angles to the belt edges. Then, from belting remnants, cut an exact fit for the hole and insert the piece, fastening it with belt fasteners all around the patch. Cement all edges thoroughly. Where it is necessary to prevent seepage of fines through belt repairs, remove one ply of fabric from a belt remnant and place it under the fasteners and rip plates.

Vulcanized patches are superior to those described above, but require the addition to the kit of a portable vulcanizer, rubberized fabric, tie gum, cover stock, a one-ply knife, and fabric pliers. In preparing a vulcanized patch, work down into the damaged belt as far as necessary by removing progressively smaller blocks of fabric with each successive ply. Clean, roughen, and cement the cavity, neatly fit in blocks of new fabric, and finally apply the uncured cover. Skive the edges of the patch flush, and vulcanize. Such patches cannot be made successfully unless the belt is dry, because the presence of moisture will permit the development of internal steam blisters. Only very large users of conveyor belting will find it necessary to vulcanize their own belt patches and splices.

Lower Drilling Costs Cited For Oriented Diamond Bits

An article published in the August, 1953, issue of the *Mining Congress Journal* holds out hope for lower bit cost per foot of hole drilled with diamond drills. Tests have shown that orienting drilling bort in drill crowns in hard-vector directions is practical and results in lower drilling costs than possible with drills in which diamonds are random set. From a production standpoint, however, there is the problem of training setters in the difficult task of setting these stones quickly and effectively, especially in the smaller sizes.

The article was authored jointly by Adrian E. Ross, president of Sprague & Henwood Inc., and Albert E. Long, chief of the Diamond Bit Research & Diamond Drilling Consulting Section, Mining Research Branch, U. S. Bureau of Mines. The tests on which the article was based were carried on co-operatively by these two organizations.

Cleveland Quarries Company Forms Silica Subsidiary

In line with its program of diversification, Cleveland Quarries Co., Amherst, Ohio, a producer of silica sand, has formed Silica Chemicals Inc. as a wholly-owned subsidiary. The new concern will manufacture chemicals and refractory products.

Head of the subsidiary, which will have its plant at South Amherst, is William M. Jones, also president of Cleveland Quarries. The new firm is making plans for production of its first product, Buckeye Silicamix. Plans call for expansion of research and manufacture of other products.

Washington Concern Installs Olivine Processing Plant

The H. P. Scheel Company, Hamilton, Wash., is proceeding with the construction of the first unit of a new olivine processing plant at Hamilton. This plant will produce 100 tons of foundry sand daily and will be the stepping stone to the production of forsterite, worth $60 per ton, iron chloride, worth $120 per ton, and magnesium chloride, worth about $200 per ton.

The University of Washington has spent over $20,000 on research on the olivine deposit near Hamilton, and ton samples have been shipped to numerous research laboratories. Four thousand tons were shipped to the Atlantic coast three years ago by Scheel. The company now has orders for several thousand tons which will be distributed throughout the nation.

According to H. P. Sheel, access to an entire mountain range 11 miles long and 4 miles wide promises to make the company an important industry of the Pacific Coast. The new plant will be used to produce glass sand for the Seattle market; and there will also be an auxiliary plant unit for the beneficiation of chrome, lead, zinc, and molybdenum ores from the surrounding Cascades.

Washington Non-Metallics Inc. has installed new equipment at its plant at Chewelah which will more than triple its output of marble products. It will be possible now to produce 150 tons daily. A 40- by 50-ft. warehouse is being built around the mill without interrupting the work in the crushing and screening plant.

FRED MARSIC, veteran official of the American Potash & Chemical Corporation, Los Angeles, was honored at a luncheon which marked the 40th anniversary of his affiliation with the company. Mr. Marsic is at present assistant secretary, assistant treasurer, and office manager. He was presented with a 40-year service pin by WILLIAM J. MURPHY, vice-president in charge of sales, who has been with American Potash & Chemical for 42 years.

ALBERT MOYER, who was formerly president of the Vulcanite Portland Cement Company, died in a New York City hospital on October 12 after an illness of six weeks. He was 82 years old. Mr. Moyer had worked for the Plant railroad system before he became head of Vulcanite. He was active in promoting new uses of concrete and was a life member of the American Society of Civil Engineers.

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Virginia Clay Brick Manufacturer Adds Lightweight Aggregate Business

By WALTER E. TRAUFFER

A general view from the mining area, overlooking the Virginia Lightweight Aggregate Corporation's plant at Roanoke, Va.

ON THE SPOT REPORT

PRODUCERS of various nonmetallic minerals often get into these industries by a rather circuitous path which is usually justified by expedience or necessity. This was the case with the Virginia Lightweight Aggregate Corporation of Roanoke, Va., when it went into the lightweight clay-shale aggregate business in 1951. This company is owned by the Roanoke-Webster Brick Company of Roanoke, and The Allied Supply Corporation of Charlottesville, Va. Roanoke-Webster has for many years been in the brick manufacturing business at a location 9 miles east of Roanoke, for the last 31 years under the present ownership.

Recognizing the growth of the competitive concrete block industry, Roanoke-Webster in 1947 went into the cinder block business on a large scale. Cinders of good quality gradually became more difficult to obtain; so it was decided to investigate the possibility of making lightweight expanded clay-shale aggregates from company-owned deposits. In 1949 the present company was formed in co-operation with Allied Supply, which has a block and building material business. The sintering method was decided on, and in 1949 a pilot machine of the Sintering Machinery Corporation was installed. With this machine various clays and shales were tested. One deposit was finally selected, just across a highway from the deposit which supplies the brick plant; the material is very similar.

A plant with a designed capacity of 400 to 450 tons of "Weblite" aggregate per 24 hours went into operation late in 1951. In its first year of operation the plant gradually worked up to this capacity, and most of the product was used in the block plants operated by the two owning companies. Capacity has now been brought up to 140 tons per 8-hour shift.

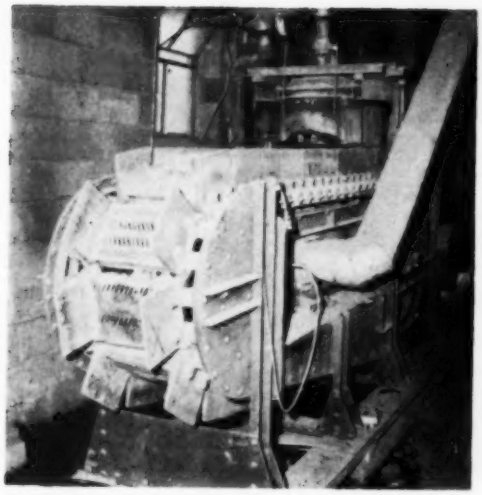
The deposit is on a hillside and has alternating layers of clay and shale ranging from 6 in. to 30 ft. in thickness. These are folded in such a way that by scraping off across the hillside a suitable mixture of about 50 percent clay and 50 percent shale can be obtained. The shallow overburden of dirt and clay is included. Removal of the material is done by a La Plante-Choate (Allis-Chalmers) 10-cu. yd. wheeled scraper which is pulled by a Caterpillar D8 tractor. In dry weather the material is hauled to a clay disintegrater for primary crushing and conveyed to an 80- by 100-ft. storage shed, from which it is later rehandled to the plant by a D4 Caterpillar loader.

A Jeffrey apron feeder discharges the raw material from the plant hopper into a J. C. Steele smooth-roll crusher for final crushing. A belt conveyor charges a surge hopper which is fitted with a switch that automatically controls the level of crushed material. A belt feeder under the surge hopper discharges the clay onto the main collecting belt conveyor. At this point the clay, fuel, and returned fines from the scrubber screen are combined to be sent to the mixer.

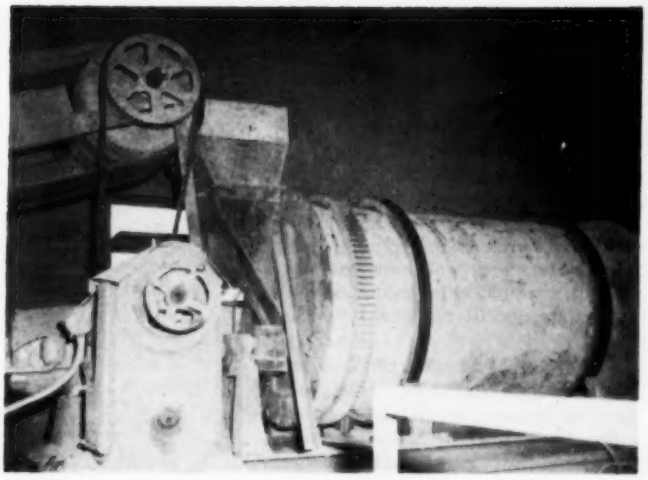
Fuel minus ⅛ in. in size is received in railroad cars and is discharged into a track hopper. A feeder and belt conveyor discharge it into a storage silo which has a capacity of five carloads. A feeder and belt conveyor reclaim the fuel from this silo to a two-car capacity surge silo. A belt feeder discharges the fuel from this silo onto the main collecting conveyor, with the clay in the desired proportion.

The main collecting belt conveyor takes these three materials to the Sintering Machinery Corp. pelletizer, which is a straight drum with a pad-

The 80- by 100-ft. raw material storage shed.



The pilot machine for testing various raw materials.



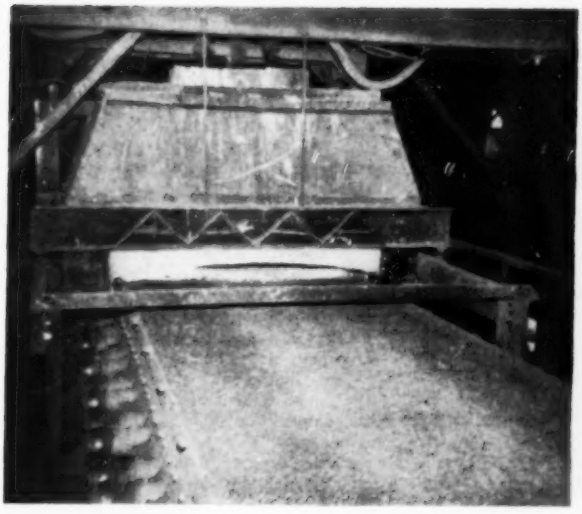
The drum for pelletizing raw material. The main collector belt is fitted with a variable-speed drive.

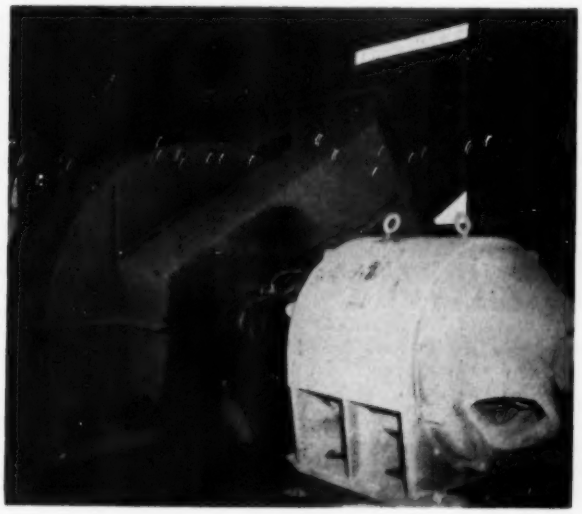
Left: The clean-out leg for the No. 1 wind box on the sintering machine.

Right: Charging the pallets with raw material, ready for sintering. The charge is distributed evenly with a swinging spout.

Left, below: Sinter cake passing under the igniter chamber.

Right, below: the 350-hp. motor and fan which provide air for the sintering machine.





dle shaft on one side. Water is added in a spray, and the material is mixed, fluffed up, and pelletized for most efficient burning. A swinging spout distributes the pelletized raw material across the width of the grate of the 60-in. by 66-ft. (330-sq. ft.) burning area. The continuous grate is made up of 84 pallets (2 ft. long and 5 ft. wide) with bar grates cast longitudinally to provide ⅛-in. openings for air passage. The grate is driven by a 10-hp. variable-speed motor which gives grate speeds of from 6 to 11 f.p.m.

The grate passes under a 12-in. by 5-ft. wide igniter chamber which has three oil burners. At the same point under the grate is the first of a series of six wind boxes which support combustion. The burner chamber is unusually short, but experimentation had shown that rapid ignition was best for this particular raw material. The fuel ignites at the top of the bed and then burns progressively down through the bed as the cake moves on. The six wind boxes extend the full length of the grate and are all connected to the main duct from the Sintering Machinery Corp. fan, which is driven by a 350-hp. Westinghouse motor. The air draft averages 18 in. of water, and an exceedingly high temperature is obtained on the grate.

When the sintered cake leaves the sinter machine, it passes over a series of rollers and is pushed into a cutter knife which breaks the cake into chunks of 8-in. size or under. From this point the hot aggregate is moved on an apron conveyor to an Allis-Chalmers revolving screen, which strips off all minus ⅜-in. material. This minus ⅜-in. material drops onto a glass-carcass rubber belt conveyor which feeds it to a storage silo. From this it is discharged by a belt feeder onto the main raw-material conveyor. The addition of this material to the raw feed improves the porosity in the clinker bed for proper combustion.

The plus ⅜-in. aggregate from the sintering machine goes to a 15- by 24-in. Traylor jaw crusher and into a storage pile. An apron feeder in a tunnel under the pile reclaims the stored material onto a belt conveyor which carries it to a 5- by 10-ft. Tyler Ty-Rock screen. The oversize goes to two Kennedy-Van Saun No. 37 gyratory crushers and is returned to the screen.

There are two sizes of finished aggregates, 3/16 in. to ⅜ in. and minus 3/16 in. These drop from the screen into individual bins. Belt feeders under these bins make it possible to blend out any desired mix

The cutter knife at the end of the sintering machine. Hot aggregate is seen on the apron conveyor. In the foreground is the special hot-materials belt for collecting return fines.

onto a carloading belt conveyor. A side chute at the carloading station can be used for truck loading. The plant is connected by a siding to the main line of the Norfolk and Western Ry., and nearly all shipments at present are being made by rail.

The finished lightweight expanded clay-shale aggregate is of high quality and is light and porous, weighing about 48 lb. per cu. ft. Each particle has many fine hairlike pores, and there are very few glass forms. It meets all strength and other requirements.

Weblite is used widely in masonry building units. Its lightweight property makes it suitable for use in burial vaults, septic tanks, roofing granules, and in lightweight concrete for floors and roofs. A 7½-bag mix of lightweight concrete gave test results of 3,678 p.s.i. in 7 days and 5,093 p.s.i. in 28 days. A cubic foot of Weblite concrete will weigh approximately 100 lb., depending on the mix desired.

Officers of the Virginia Lightweight Aggregate Corporation are as follows: Warren Hobbie, president; Elmer E. Burruss, vice-president; and John S. Wise, treasurer. B. K. Powers is plant superintendent.

Flint Crushed Gravel Co. To Alter Iowa River Course

The Iowa Natural Resources Council has authorized the Flint Crushed Gravel Company, Des Moines, Iowa, to straighten the Iowa river in and adjacent to the corporate limits of Tama. The council stated that the firm will take a turn out of the stream on company property and shorten the river by about ½ mile.

Purpose of the project is to make land accessible to the firm for further development of sand and gravel deposits. The company gave the council no estimate of the cost of the project, but indicated that the work will be done in the near future.

1952 Bauxite Output Spurred By Growing World Demand

Large-scale expansion of bauxite mining and processing facilities proceeded in the West Indies, the Guianas, west Africa, and south-central Europe during 1952. The demand which led to the new developments resulted from a phenomenal expansion of the aluminum industry, particularly in the United States, Canada, Germany, and the U. S. S. R. Although the United States had been neither an international supplier of bauxite nor a self-sufficient nation in aluminum ore in recent years, it continued to possess all of the alumina production capacity it required. All four of the alumina plants which were operated since the war were expanded under the aluminum expansion program. One new alumina plant began production in 1952, and a sixth plant was under construction.

In 1952 crude ore production (dry equivalent) in the United States amounted to 1,667,047 long tons; in 1951 the figure was 1,848,676 tons. Imports (as shipped) for 1952 were 3,497,939 tons; in 1951 imports were only 2,819,676 (revised figure). In 1952 this country shipped 41,330 tons, against 89,948 tons in 1951. We consumed a total of 4,240,891 tons in 1952; only 3,945,667 tons in 1951. World production last year amounted to 12,634,000 tons (revised figure), against 10,811,000 tons (revised figure) in 1951.

Frank Champion, a Houston oilman, has been named president and general manager of the Lone Star Sulphur Corporation, a sulphur producing firm organized last year. He will also serve as chairman of the board.

Mr. Champion is also president of the Champion Oil & Gas Co., Inc., as well as the Texas-Ohio Gas Co. In addition he is a director of both the Gulf Canal Lines and the International Petroleum Association of America.

Expanded Shale Institute Holds Fourth Annual Meeting

● Directors of the Expanded Shale Institute and guests at the banquet given in the Smithwick company offices at Portland, Oreg.

THE Expanded Shale Institute, whose members represent approximately 75 percent of the total production of expanded shale by the rotary kiln process in the United States and Canada, held their four-day annual fall meeting in Portland, Oreg., from September 23 to 26. Among the principal items considered and approved at the Portland meeting was a five-point research program for 1954, which included the following items:

Lightweight masonry fire tests
Research and study in plastic flow
Study of curing
Design of insulating roof decks
Study of volume change

The institute is conducting an extensive correlation testing program at the University of Toledo covering modulus of elasticity, shrinkage, flexure, and compressive strength of all aggregates produced by the member companies. The program also includes aggregates from three sintering producers.

It was pointed out by the president, S. Carl Smithwick, that since the founding of the Expanded Shale Institute in St. Louis in the spring of 1952 the membership has increased from 12 to 20 producers, representing 14 states and 2 Canadian provinces. The increase is undoubtedly due to the fundamental aim of the institute, which is to improve and extend the use of expanded shale concrete through sound research and experimentation.

Two and a half days of extensive committee work were followed by an open session and a luncheon at the Hotel Multnomah. Members of the American Institute of Architects, The American Association of Civil Engineers, and the Professional Engineers of Oregon were invited to attend the program. The principal luncheon speaker was Charles E. Andrew, chief engineer of the Washington Toll Bridge Authority and formerly principal engineer of the San Francisco-Oakland Bay bridge. During World War II he was chief engineer of the ship-building program at Oakland, where vessels were built of expanded-shale concrete. Mr. Andrew's discussion covered the structural uses of expanded-shale concrete. He pointed out that, in his opinion, it was unnecessary to lay any wearing surface on the decks of bridges other than the expanded shale concrete itself. He pointed to successful examples of this type of construction, including the Eleventh Street bridge in Tacoma, built eight years ago. Here the expanded-shale concrete wearing surface has successfully withstood the abrasive action of traffic. He also cited the The Dalles bridge spanning the Columbia River, now under construction, where no other wearing surface was called for.

Another speaker was Cedric Willson, chairman of the Technical Problems Committee of the institute and vice-president and chief engineer of Texas Industries, Inc., Dallas, Tex., who told "The Story of the Selma". He described the excellent performance of expanded-shale concrete which had been submerged in salt water off Galveston for 34 years. E. A. Peterson, general manager of Rocklite Products, Ventura, Calif., led a discussion on "Promotion and Uses of Expanded Shale in Southern California". Robert Lochow, structural engineer of the Portland Cement Association, Seattle, spoke on "Precast and Prestressed Lightweight Concrete"; and George Bickel, secretary of the institute and sales engineer of the Featherlite Corporation, Dallas, Tex., gave a talk on sales and promotion.

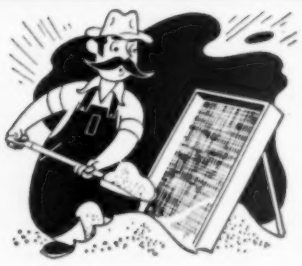
The fourth day of the convention was climaxed by a scenic trip to Mt. Hood, and luncheon at the Timberline Lodge. In the afternoon there was an inspection tour of the Smithwick expanded shale plant in Portland, followed by a banquet at the Smithwick Concrete Products offices.

The spring meeting of the institute will be held in Louisville, Ky., with Kentucky Light Aggregates, Inc., as the host.

According to Cris Dobbins, president of the Ideal Cement Company, cement sales and income have been rising this year. Net income for the first six months went up to $4,022,188 ($2.45 per share) from $3,221,500 ($1.97 per share) last year in the comparable period. Sales and other income amounted to $26,291,509 from January to June, 1953, period; last year the figure was $23,438,065.

● Gathered for an informal chat at the recent Expanded Shale Institute meeting during a social hour were, (left to right): Dr. Ray E. Lemley, president, Light Aggregates, Inc., Rapid City, S. D.; Carvel Linden, president, Portland Chamber of Commerce; Mayor Fred L. Peterson of Portland; and S. Carl Smithwick, president of the institute.

Screenings

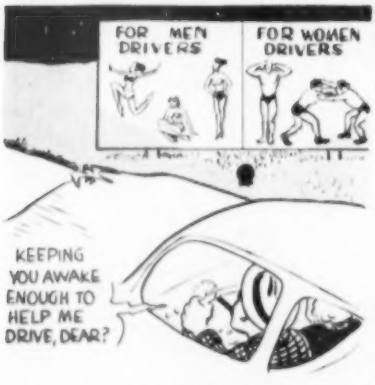


by William M. Avery

ORDINARILY a serious meeting in the interests of safety would afford no grist for this department's mill, but just this once we are succumbing to temptation long enough to comment briefly upon two unrelated items involving last month's National Safety Congress in Chicago. Acting as host to the some 12,000 people who participated in the affair, the National Safety Council sent out letters to the editors of the nation's business papers outlining the various services which were to be made available at the headquarters of the Congress.

"Come in," said the letter, "and we will run people down for you." Just off hand we can't think of a more effective way to enliven a National Safety Congress, since it is i n c o n c e i v a b l e that 50 editors wouldn't be able to nominate at least a few candidates for run-down attention in a city of almost 4,000,000 people. We're going to ask the Council to send us statistics on this unusual service as soon as they have been compiled.

The other item concerns a talk at one of the sessions of the Congress in which a highway authority suggested that a form of hypnosis induced by monotony may be the cause of the heavy accident toll on modern



expressways. This fellow's theory is that unless obvious hazards exist to excite him, the driver will not be sufficiently stimulated to be alert or to stay awake if he is tired.

One of the remedies he suggested was that entertaining or amusing billboards be erected on expressways. Our source of information doesn't indicate clearly just what type of humor or entertainment the speaker may have had in mind, but we can at least hope that the Burma Shave school will not prevail. We damned near ran into a culvert once trying to read the last line of one of *their* jingles.

Or Steal It, Either

THE exquisitely beautiful creation shown in the accompanying cut drifted into our hands some time

ago along with a descriptive blurb which called it the "world's most unique monument". Located at Kissimmee, Florida, it is officially called the Monument of States because it is composed of more than 1,500 stones from every state in the Union, to say nothing of 21 foreign countries, the Harvard Medical School, and the barber shop quartette of Weehawken, New Jersey.

Whether or not the thing deserves the title of "*most* unique", we think its designers can certainly rest easy on one point: nobody is likely to try to copy it.

Half-Shell Game

SEVERAL months back this department noted the use of blast-furnace slag as a clutch or nest for feeding baby oysters. Now Ed Bauman, managing director of the National Slag Association, has turned up with an even harder-to-believe use for the material. Ed insists that slag screenings about the size of buckshot are being used in a tumbling process for peeling horseradish. Now if they can just get their material tied up in some way with the production of catchup, the slag people will stand a fair chance of controlling the oyster cocktail industry.

3-D Daze

THE Dragon Cement Company's fine bi-monthly magazine, *The Dragon*, seems to have earned the distinction of being the first publication in our field to erupt with a 3-D cover—an aerial view of the company's plant at Thomaston, Maine. We've contracted an acute case of blind staggers glaring at their September cover through the colored viewers which were mailed out with each copy, and we *still* haven't experienced any arresting sensation of depth, although others assure us that the effect is tremendous. Either our vision is ill-adapted to the modern age, or we're surrounded by a bunch of wishy-washy characters who just won't admit that it puts them on the ropes, too.

Anyway, the whole thing shows that the editors of *The Dragon* are right on their toes, and if any of them go blind looking at this and subsequent 3-D covers, we'll promise *never* to say we told 'em so!

So Who Cares!

A MEMO from our Directory Department reveals that the current issue has two companies listed for the town of Dry Branch, Georgia. The name of the county will be a source of gratification to those of our readers who like to have such things fittin' and proper: it's Twiggs.

NEW NO. 6 SHOVEL

"BOUGHT SIGHT UNSEEN... BETTER THAN I EXPECTED"

"I bought this machine sight unseen on Caterpillar reputation, and it does even better than I expected," says L. A. Scharringhausen of his new Caterpillar No. 6 Shovel. This versatile unit, shown working in a gravel bed near Palatine, Ill., stockpiles and loads gravel, and strips about six feet of clay overburden. Average load is three tons of gravel—ample proof that its two-yard bucket is conservatively rated.

Even with a full bucket load, the tractor will not "dance." It is designed as a unit, with the weight of the bucket distributed so that the full track length stays on the ground. "It balances much better than I ever expected," Mr. Scharringhausen says.

The operator sits high and well forward and has excellent visibility ahead and to all sides. With an honest 66 HP at the drawbar, the Cat* No. 6 Shovel has plenty of power to handle full two-yard loads. A 96" heavy-duty quarry bucket is only one of many optional items that can add still further to the Caterpillar No. 6 Shovel's usefulness.

Ask your Caterpillar Dealer to arrange an on-the-job demonstration of this new and popular addition to the line of dependable yellow machines. Find out for yourself why so many quarrymen are adopting this fast-maneuvering, clean-dumping Caterpillar unit. And remember, you can always count on your nearby dealer for prompt service and genuine Caterpillar parts.

Caterpillar Tractor Co., Peoria, Ill.

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

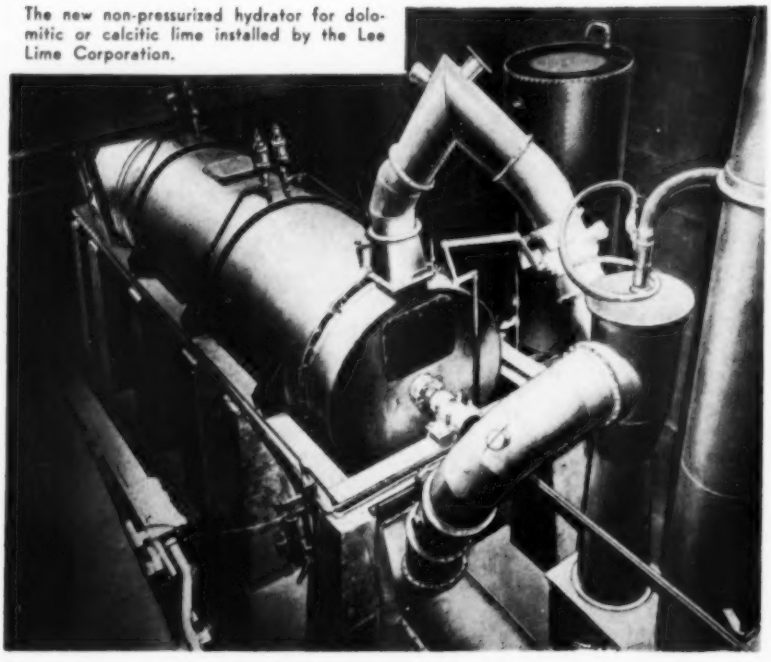
New Type Of Continuous Hydrator Does Outstanding Job For Lee Lime Corp.

A DEVELOPMENT of far-reaching importance to the entire lime industry was unveiled at Lee, Mass., several weeks ago when the Lee Lime Corporation allowed representatives of the technical press to see in action for the first time an entirely new type of continuous hydrator. Developed by Kennedy-Van Saun Mfg. & Eng. Corp., this hydrator effectively utilized the collaboration of John Gaisford, chief chemist for Lee Lime, and Professor J. A. Murray of Massachusetts Institute of Technology. The new equipment was designed expressly to produce a thoroughly hydrated dolomitic or calcitic lime without recourse to pressure hydration.

Of the several novel features incorporated in the design perhaps the most interesting is the manner in which heat is released in the initial calcium hydration stage of the process and returned to the hydrator to serve as a catalyzer in the later magnesium hydration phase, permitting a remarkable degree of heat balance to be established, once the process is in full swing, and assuring very close temperature control at all times.

In over three months of full-scale operation the new equipment has hydrated virtually 100 percent of the magnesium content of the feed. Ignition loss of the end product normally runs 27 to 28 percent. All of the hydrate produced to date has been of exceptionally uniform quality. Its subsequent expansion is of a very low order of magnitude because of the complete hydration of the magnesium content of the quicklime.

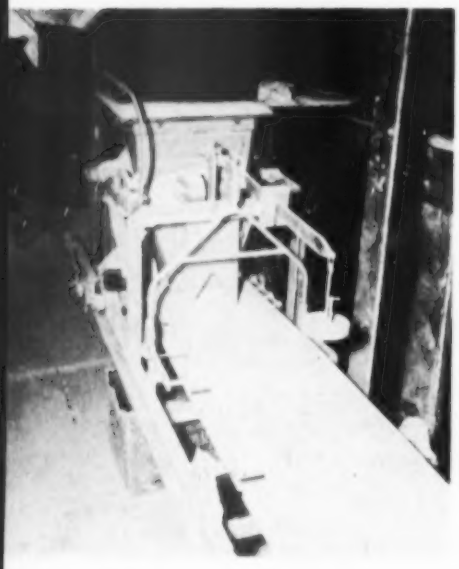
The new non-pressurized hydrator for dolomitic or calcitic lime installed by the Lee Lime Corporation.



From the standpoint of capacity, the new hydrator has considerably exceeded the designers' expectations, a fact which seems most easily explained in the terms of mass reaction, which is one of the important features of its operation, and the catalytic effect brought about by the closed-circuit heat exchanger. Production ranging from 5 to 6 t.p.h. is easily attained, and it appears virtually certain that with the coal-fired rotary kiln lime being used to feed the system much larger hourly tonnage can be obtained.

The rotary kiln product is prepared for hydration and fed into the hydrator circuit by means of a Poidometer, so that all of the material is accurately weighed. This continuous weighing device discharges onto a belt conveyor which in turn feeds a high-speed mixer. The milk of lime is introduced at this point after passing through a Rotometer to assure the desired proportion of water to weight of lime. The material is mixed and fed to the hydrator as quickly as possible in order to complete this stage before the sticky phase of the reaction develops.

The plow-like paddles inside the hydrator have just enough inclination to cause a gradual movement of the mass from the point of entry to the discharge end of the unit.



Left: The continuous weighing device which is the first step in the hydrator circuit and feeds lime to the high-speed mixer.

Right: The high-speed mixer which feeds milk of lime direct to the hydrator.

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Their only other function is to keep the material from sticking to the walls of the hydrator. Time of retention runs about an hour in the Lee installation, this factor being controlled to some extent by the setting of an adjustable dam at the discharge end of the hydrator.

Although the installation at Lee was initially conceived as a pilot-plant, all of the facilities were designed by Kennedy-Van Saun on a full-production basis, and it seems especially noteworthy that the plant has produced marketable material almost from the first hour it was placed in operation. Various tests show water retention ranging from 92 to 95 percent in the finished product, and the hydrate produced has already evoked considerable favorable comment in connection with both masonry and finish-coat use.

A technical report made by A. R. Allen, well-known engineer on the Kennedy-Van Saun staff, states, "We analyzed the hydrate that we had produced in the preliminary run on the first day's operation at the Lee plant, and found that it exceeded the 60 percent hydrate, which was the best their present, non-pressure hydrators could do on the oxides of the dolomite. The quality of the lime, both as regards plasticity and water retention, has exceeded the government specifications, which call for a maximum of 8 percent unhydrated oxides and a minimum plasticity figure of 200. This will give the Lee Lime Corporation a wide factor of safety in their final product to meet the most exacting specifications for users of hydrated dolomitic lime."

A report by John Gaisford, chief chemist of the Lee Lime Corporation, to Mr. Deely, president, states: "Laboratory tests such as Professor Murray and I ran prior to its construction do not always come out so successfully on a full scale as they do in a laboratory. I know both Prof. Murray and myself were extremely anxious to see how much the effect of mass would be when the test came as full scale.

"I am now glad to report that from the start we exceeded the current type S specification for unhydrated oxides. Once we have the chemical reaction, any minor mechanical troubles can be easily overcome. Since then we have reduced the unhydrated oxide content to less than 1 percent.

"Even more remarkable is the way the hydrator has handled varying degrees of overburn in the quicklime fed to it, while still producing a good, even product. This is due to the method of hydration with a heat exchanger as the overburned and therefore slow-to-hydrate oxides, being heavier than a hydrate, are automatically retained longer in the hydrator before passing over the outflow dam and thereby completely hydrated.

"As regards to output, it is more than we expected, due to the speed up in the hydration of the magnesium which we have found. We have had to cut down the outflow dam by 18 in., as otherwise we should have made more hydrate than the plant could handle.

"Another feature which has been most gratifying is the plasticity. Both Professor Murray and myself were afraid that you would have to install a tube mill to get the plasticity we wanted—about 350 emley. But much to our surprise we got it with your imp. mill. I feel that this can only be accounted for by the temperature control of the heat exchanger."

These reports show that the non-pressure hydrator had exceeded the A.S.T.M. specifications for water retention in the hydrate, which calls for 75 percent water retention for Type N, and 85 percent for Type S.

This property of water retention is conceded by all research workers in lime to be perhaps the most important property the product can have.

Further tests have indicated the following data obtained in duplicate runs:

Wt. lime	500	500
Wt. Ottawa sand	1500	1500
Wt. water	475	475
Initial flow	113	112
Flow after suction	107	103
Water retention	95%	92%

While the hydrator was designed for five tons, it produced as high as six tons, and it is indicated that even this capacity could be materially increased.

Experience with the hydrator in this first installation has shown that it is entirely feasible to operate all of the facilities with just one man. Kennedy-Van Saun, which provided virtually all the equipment for the plant at Lee, now plans to manufacture the new type of hydrator for general use in the lime industry.

By the use of a method of unit construction, the hydrator is flexible for fitting into various designs of plant layout. Also, this enables the correct sizes for high-speed mixers, dryers, etc., to be assembled for use either to hydrate high-calcium or dolomite limes.

An old and well-established New England concern, the Lee Lime Corporation several years ago completed a major improvement program which included the installation of a 7½- by 125-ft. Kennedy-Van Saun rotary kiln, equipped with a preheater and deheater of latest design to replace their old vertical kilns. Officers of the Lee Lime Corporation are John M. Deely, president, and John M. Deely Jr., vice-president. This successful father-and-son team represents the third and fourth generations of the family in the industry.

Sintering of Shales

(From page 100)

were less than those of blocks made with commercial, expanded blast-furnace slag; and the yield in blocks per bag of cement was greater. All of the blocks that were tested for water absorption met the A.S.T.M. specification (15 percent by weight).

Other Promising Raw Materials Coal mine shales from Beech Grove, Caryville, Oliver Springs, Coalfield, and Pioneer, Tenn., were found to be satisfactory raw materials for the production of lightweight aggregate by the sintering process. Chattanooga black shale (an oil shale), as well as the carbonaceous residue from its distillation, was used successfully as a sinter charge in admixture with Rome shale.

In addition to the Rome shales, the following noncarbonaceous materials were found to be satisfactory: Floyd shale from near Rome, Ga.; Rockmart shale from Rockmart, Ga.; Brevard schist from Henderson and Transylvania Counties, N. C.; Hampton shale from Avery and McDowell counties, N. C.; and Porters Creek clay from Marshall County, Ky.

Conclusions A sintering process was developed which was suitable for the production of satisfactory lightweight concrete aggregate from raw shales. The most important factors in sintering noncarbonaceous shales were found to be the moisture and carbon contents of the charge. With the carbonaceous shales, the moisture and carbon contents of the charge and the depth of the charge bed were found to be the most important factors.

The sintering process developed by TVA is being used commercially for producing sintered aggregate from coal mine and Rome shales.

Acknowledgments E. L. Stout and B. A. Batson made important contributions to the development of the process. J. P. Harris assisted in the pilot-plant work.

References: (1) Tennessee Valley Authority, Chemical Engineering Report No. 4, compiled by E. L. Stout, U.S. Government Printing Office, Washington, D.C. (1950). (2) U.S. Bureau of Mines R.I. 4401, *Production of Lightweight Concrete Aggregates from Clays, Shales, Slates, and Other Materials.*

Scrubbers Remove Gas Danger From Underground Diesel Use

DIESEL equipment, highly desirable for mining because of its economy and efficiency, has heretofore often been ruled out for underground operations because of the presence of irritating and toxic gases which are characteristic of internal combustion engines.

Development of exhaust gas conditioners or scrubbers, however, has made diesel power available for operation in non-gaseous mines with complete safety.

Usually four conditions must be satisfied before diesel engines may be used underground. First, amount of noxious gases must be reduced to comply with federal and state safety regulations. Second, starting must be accomplished by means other than gasoline engines, since many mines require that engines be shut off frequently. Third, ventilation of the mine must permit sufficient oxygen for safe diesel operation. Fourth, local safety regulations must be met.

Gases produced by fuel combustion consist principally of carbon monoxide, oxides of nitrogen, aldehydes, and in some fuels, oxides of sulphur. While they are not poisonous, the aldehydes have an odor, and they are irritating to the eyes, nose, and throat. Carbon monoxide is odorless and may be deadly if concentrations become too great in a confined area. Since carbon monoxide is easily measured and since the gases are in direct proportion to one another, carbon monoxide is the yardstick by which harmful gases are measured.

Aldehydes and a portion of the carbon monoxide can be removed from the engine exhaust gases by use of an exhaust gas conditioner or scrubber. The remainder of the carbon monoxide and oxides of nitrogen are dissipated in the mine atmosphere by adequate ventilation of the mine working areas. The scrubber also reduces the temperature of the exhaust gas to about 180 deg. F. According to authorities, ventilation of the mine should be such that the overall oxygen content, where diesel engines are working, is not depleted more than 19 percent.

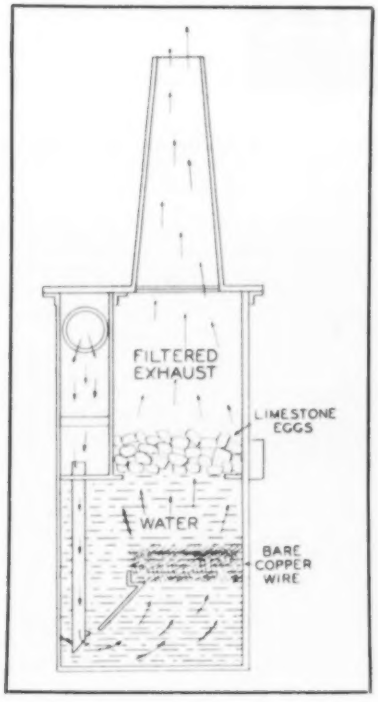
The size of a scrubber used on mobile equipment depends upon stroke-cycle, horsepower, r.p.m. and piston displacement. The engine exhaust is piped from the exhaust manifold to the scrubber, where it is baffled through water and then over a copper wire network and limestone rock. The box is filled to liquid level every four hours and drained and refreshed every shift.

Caterpillar Tractor Co. recently informed dealers that a steel plate box scrubber for the D2 or D4 is manufactured by The Landis Steel Company of Picher, Okla. A stainless steel scrubber is sold by The Ruth Company of Denver.

Some mines require that engines be shut down at frequent intervals, and mine operators are prohibited from using gasoline engines underground in some states. Therefore, diesel powered machines are often equipped with push-button electric starting for underground applications.

For mines which do not require frequent diesel shut-down, compressed air starting has advantages over electric starting—lower initial cost, lower maintenance and service cost, ability to function under conditions of high humidity, and improved starting in cold weather. Air can come from an air brake compressor receiver or from another tractor.

Acceptability of any piece of equipment for use underground must be established with state and local safety agencies. It is the responsibility of the mine operator, who should be familiar with safety regulations and procedures and in frequent contact with the regulatory authorities, to determine whether a machine is acceptable for use in his enterprise.



Left: Schematic drawing of an exhaust scrubber found to be successful in making diesel-engine-driven machines suitable for underground mining operations.

Below: Exhaust scrubbers have been installed on both the tractor-loader and the diesel-tractor-drawn wagon in this operation to render the equipment safe for underground use.

New Gypsum Rock Deposit To Be Developed by National

The National Gypsum Company is developing what is believed to be the largest gypsum-rock deposit in North America in the wilds of Nova Scotia, about 30 miles northwest of Halifax, an official reported.

It was stated that the company has earmarked about $5,000,000 to develop the deposit. Most of this sum will be spent for dock facilities in Halifax.

The present gypsum quarries operated by National Gypsum near Dingwall, Nova Scotia, will be closed when the new deposits are fully exploited.

● Correction

We regret that one of three gentlemen in a photograph appearing on page 77 of our November issue was incorrectly identified. The correct initials of Mr. Thornton are G. A., and not H. C., as given.

For the 52nd time members of the American Road Builders' Association will convene for their annual convention, to be held this time on January 5 to 7, 1954, at the Chalfonte-Haddon Hall in Atlantic City. Associated Pennsylvania Constructors, Inc., will serve as affiliate host for the meeting.

personal mention

JAMES W. MCKNIGHT was named a regional highway engineer of the Portland Cement Association, effective July 20. Mr. McKnight, with headquarters in Pittsburgh, will serve Delaware, Maryland, Pennsylvania, Ohio, and West Virginia. He succeeds W. J. McIntosh, who recently was promoted to the post of district engineer in charge of the association's New York office.

After receiving a B.S. degree in 1934, Mr. McKnight was employed for two years as a construction inspector and design assistant with the Pennsylvania Department of Highways. During 1936 and 1937 he was assistant engineer of surveys and highway design for Allegheny County, Pa.

Mr. McKnight joined the staff of the Portland Cement Association in 1941 as a field engineer of the Philadelphia office, the position he held at the time of his promotion.

WAYNE MULLIN, formerly in the subcontracting business in Northern California, will be Kaiser Gypsum Company's representative in the sales area from Oroville, Calif., to Grants Pass, Oreg., with headquarters in Redding, Calif.

ED RYAN, who has been with Kaiser Gypsum for the last three years, has joined the Southern California district sales staff in Los Angeles.

WALTER T. SMITH of Phoenix, Ariz., has been assigned the Arizona sales territory.

The appointment of JAMES A. WHITE as sales representative in Stanislaus, Merced, and Mariposa counties of California has been announced by the Calaveras Cement Company. Mr. White has established headquarters in Modesto. He will also serve portions of southern San Joaquin and northern Madera counties.

MARTIN V. COFFEY, general sales manager, Philip Carey Manufacturing Company, Cincinnati, Ohio, has been reappointed to the planning committee of the Asbestos-Cement Products Association.

The appointment of ROBERT L. ZALE to the newly-created position of products promotion manager for the National Gypsum Company has been announced.

Mr. Zale was formerly assistant to the advertising manager of the Toastmaster Products Division of McGraw Electric Company in Elgin, Illinois. A graduate of the University of Missouri school of journalism, he served with the Army for three years during World War II.

JOHN G. KRUSE and RICHARD L. POST were recently elected assistant secretaries of the Minnesota Mining & Manufacturing Company.

Mr. Kruse joined 3M as a statistician in 1941. During World War II he headed the firm's compliance division in matters concerning War Production Board regulations. He has been secretary of the company's executive committee since 1946.

Mr. Post has been with 3M's legal department since graduation from the University of Minnesota law school in 1946.

WILLIAM R. SOULE has been appointed assistant controller of Kaiser Gypsum Company. Mr. Soule has been an administrative financial assistant for various Kaiser companies since 1941, including the Henry J. Kaiser Company, Kaiser Aluminum & Chemical Corporation, Kaiser Steel Corporation, Kaiser Metal Products, Inc., and the Kaiser Foundation. He will work under the direction of BRYCE SIMPSON, Kaiser Gypsum controller.

CLYDE C. SPRAGGINS has been named superintendent in charge of Dallas Lightweight Aggregate Company, a division of Texas Industries, Inc.

E. C. MERONEY, formerly superintendent at Dallas, has transferred to Eastland as superintendent of the Texas Lightweight Aggregate Company's plant, another division of Texas Industries, Inc.

RALPH L. DICKEY, president of the Kelley Island Lime & Transport Company, Cleveland, Ohio, and an active National Lime Association member, was re-appointed to the United States Chamber of Commerce Committee on Natural Resources.

H. C. WERMUTH is the new sales manager for the Dragon Cement Co., Inc., New York, N.Y. Mr. Wermuth succeeds H. K. HARTMAN.

WILLIAM H. RECTOR has been appointed assistant merchandise manager of the roofing and allied products department of The Celotex Corporation, Chicago, Ill. Mr. Rector has been associated with Phillip Carey Roofing Co., Cincinnati, and more recently with U. S. Gypsum Co., Chicago.

obituaries

MR. AND MRS. CHARLES CULLOR of Cullor Limestone, Fort Scott, Kans., were killed in a plane crash north of Kansas City on October 25. They had been visiting friends and relatives at Unionville, Mo., on that day, and took off early in the evening in their private plane. It is thought that bad weather and fog caused Mr. Cullor to lose his bearings and fly too low. Mr. Cullor was an active member of the Missouri Limestone Producers Association.

JAMES PIERCE, former superintendent of the Onondaga County quarries, Syracuse, N. Y., died on July 17 after a short illness. He had been employed by the county highway department for 40 years prior to his retirement in 1949.

JOHN B. FOSTER, 75, former superintendent for Rock Asphalt, Inc., Buffalo, N. Y., and a pioneer in the asphalt paving field, died on November 4.

Coming to Buffalo from Canada in 1898, Mr. Foster joined the Barbour Asphalt Company. He was plant superintendent of the Rock Asphalt, Inc., for 30 years until he retired in 1945.

CHAUNCEY L. SHARPE, 40, manager of Canada Gypsum Company, Ltd., Guelph, Ontario, died on August 13. He was born in the United States and went to Canada from the head office in Chicago in 1946.

A. J. MAYER, who formerly headed the Carthage Marble Corporation, Carthage, Mo., died on October 31 in Oak Park, Ill. Mr. Mayer was in business at Carthage from 1929 until 1937.

WILLIAM SCOTT, a designing and mechanical engineer on the staff of the Universal Atlas Cement Company, New York, N. Y., died in the firm's office of a heart attack on October 19. Mr. Scott, who was a native of England, was a member of the American Society of Civil Engineers and the American Society of Mechanical Engineers. He was 70 years old.

new machinery and supplies

PIT AND QUARRY

• I-H Has 4-Wheel Drive

Recognizing the growing need for light- and medium-duty front-axle trucks, *International Harvester* has introduced two new 4-wheel drive models specially

designed for use in rough terrain. One has a GVW rating of 11,000 lb. with 130- or 142-in. wheelbases. The other has a 15,000 lb. GVW in 154- and 172-in. wheelbases. Both models are available with front-mounted winch. Shown is the smaller unit, mounting a Failing drilling unit for exploration work.

• Electric Plants

Two gasoline-driven electric plants rated at 10 and 15 kw a.c. have been added to the water-cooled line of engine-generators built by *D. W. Onan & Sons*,

Minneapolis. The streamlined line is powered by 4-cylinder Continental engines, and has specially designed Onan generators.

Voltage regulation of ±2 percent, the ability to start motors on the basis of 2,000 watts per hp, and maintain 80 percent of rated voltage with a load on the motor are features of this HQ line. A semi-flexible drive disc connects generator and engine.

An impulse-coupled magneto with special radio shielding for easier starting is one feature of the engine, which also has a sliding battery rack, a new cooling system requiring only 10½ qts., and a fuel consumption rate well under one quart per kw.-hr. at full load.

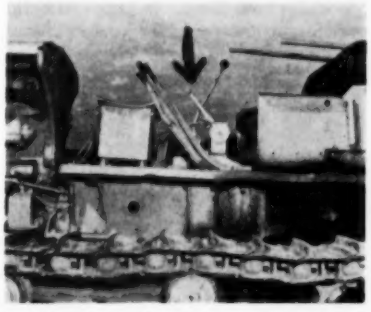
• Recovers Lost Sand

Material, 30 to 250 mesh, usually lost in washing plant tailings is recovered by a recently developed cyclone-type hydraulic unit, the Sandcone separator. Centrifugal force is employed for the separation, and the vacuum created by the swirl and the overflow drop provides the necessary rate of water and slime overflow from the cone.

The unit needs only low pressures says the *Sandcone Separator Co.*, 1709 W. 8th St., Los Angeles 17. This results in longer pump and separator life. The Sandcone gives positive control of the dryness and classification of the recovered material. Single, dual, and multicone units are furnished, and present installations are saving losses that previously amounted to as much as 15 percent of a sand plant's production

• Throttle Control

The performance of gasoline or diesel-powered equipment is considerably improved with a new throttle control developed by *Link-Belt Speeder Corp.*, Cedar



Rapids, Iowa, for use on all sorts of engine-driven equipment in our field. Providing an infinite range of engine speeds, the stepless, positive-action, friction-type control holds speed constant, once set, despite vibrations that may be encountered. Mounted any place a governor cable can be attached, the control needs no adjustment to compensate for engine size or type. Installations are being made by Link-Belt Speeder distributors.

• A fleet of Kenworth 801 trucks haul 18-ton payloads on California's Vermillion dam project. Grades are often 15 percent, 7500 ft. above sea level. Cummins NHBID-600 engines and Fuller transmissions are used.

• Eimco's Heavier New Tractor-Loader

Design and operational improvements galore are built into the recently-unveiled Eimco 105, a heavier, more versatile excavating and loading machine than heretofore available, reports the *Eimco Corp.*

The Salt Lake City firm's new unit weighs 34,000 lbs., has the new Unidrive transmission, has new controls and instruments, new final drive, alloy-steel construction throughout, and many other engineering features.

Independent control of each crawler track, with full reversal in either direction, is a major feature of the Unidrive transmission, providing maneuverability found in no other tractor, Eimco says. The transmission is designed to combine all the best features of torque converter, constant mesh gearing, and hydraulically-actuated friction clutches with sealed oil bath, pressure lubrication of all wearing parts.

Each track has its own new final drive, featuring extra-heavy construction of shafts, gearing, and bearings, but no clutches, brakes, or complicated assemblies within the drive case. Several component parts have been produced using liquid flame hardening, believed to be the first commercial application of this process of martempering.

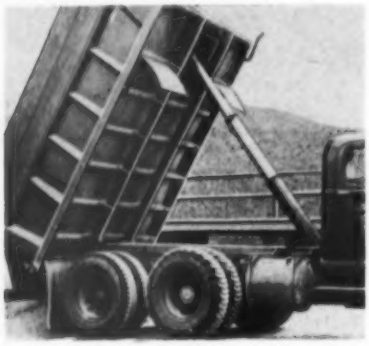
The 105's operator sits comfortably on sponge rubber in a steel cab mounted well-forward for visibility. A cigar lighter and a rear view mirror add to his working comfort. Two small handles, operated by one hand, provide all tractor controls, while the attachments are controlled by his other hand.

The power plant for the new Emico is a 90-hp. diesel with matched torque converter. Located at the center of the machine, it faces rear.

The excavator on the new unit is different from any previous Eimco loader, although it includes the famous rocker-arm principle. Driven from the front power take-off, it has a two-speed transmission of the same general type as the tractor. Low speed is recommended for heavy excavating, but it can be shifted into high during travel for long discharge into big trucks. Low is used throughout the loading cycle for small light trucks. This combination gives a long-desired flexibility, Eimco says.

• Hoist Boosts Payload

Providing up to 1000-lb. extra legal payload, a new front-mounted telescopic truck hoist is being made by *Hercules Steel Products Corp.*, Galion, Ohio. Designed particularly for heavy-duty dump-



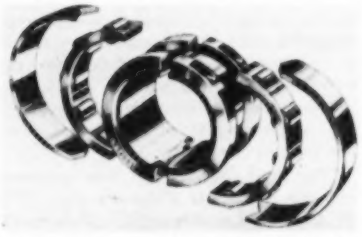
truck bodies 11 to 15 ft. long, the weight of the 20-ton capacity hoist is shifted forward to put more load on the front axle, increasing the maximum load per axle. No part of the hoist extends below the truck frame. It is made for single or tandem-axle straight trucks.

• Rod Repairs Manganese

A new manganese-nickel steel welding rod for repairing or building up manganese steel castings has been announced by *Wall Colmonoy Corp.*, Detroit 3. Called Walmang, the new rod has been developed to provide an austenitic manganese steel welding rod that produces weld metal having the same manganese content, work hardenability, and wear resistance as cast 12 percent manganese steel.

• Split Roller Bearings

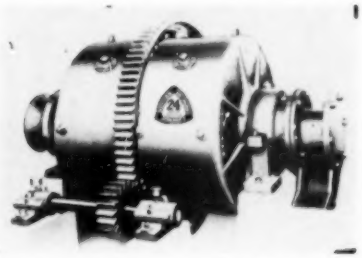
Regular anti-friction roller bearings have an added feature when made by *Cooper*, an English firm now establish-



ing warehouse stocks and distribution in the United States. Cooper bearings are split right down to the shaft to enable their application where it would be impractical or impossible to mount solid ball or roller bearings. Made in halves throughout, the Cooper bearings come in both expansion and fixed types in a wide range of sizes. Cartridge units and pillow blocks to match are available. These split roller bearings can be used for all normal bearing duties as well.

• Small Ball Mills

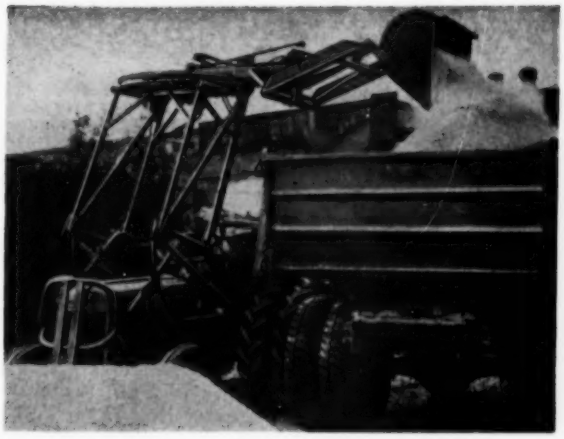
Two 30-in. ball mills, ideal for small tonnage operations, regrinding and other duties, have been placed in production by *Denver Equipment Co.*, Denver 17, Colo. One of the Economy mills is 30



by 18, the other 30 by 36. The smaller can be made into the larger size with interchangeable liners, lifter bars, and end liners. Because the 30-in. diameter is measured *inside* the liner, 32 percent greater capacity is gained, Denver says. Shown is a 30 by 36 mill with left-hand drive.

• Abrasive wear is said to be reduced considerably by "Iron Rubber" sheets, made by Magic Chemical Co., Brockton 2, Mass. Left, strip at end of gravel chute after two months, where steel plate was replaced every six weeks (Blue Stone Quarry, New Bedford). Right, piece fastened to screen under conveyor discharge shows no wear after three months at Thomas Bros. Quarry, Raynham, Mass.

New Dodge Line



Wagner Loader

• Many Features in Trucks

New V-8 engines are among the 75 new features of the 1954 *Dodge* C-1 Job-Rated trucks. Power steering, more compact tractors for larger payloads, wider front treads for better maneuverability, new frames, increased driver comfort and visibility, lower loading height, better road stability, and completely new styling are among the other highlights. The line has been redesigned to meet about 98 percent of all hauling needs, Dodge says, with more compact tractors to permit longer legal trailers.

Seven engines, ranging from 100 to 172 hp., serve the C-1 line. Gross vehicle weights run from 4,250 to 40,000 lb.; and gross combination weights to 60,000 lb. The V-8 is offered with six models in the 133-, 153-, and 172-hp. classes. Six-cylinder engines are available in other units.

• Flexible Coupling

Faster installation and easier removal for maintenance feature a new flexible coupling that has the completely split

interchangeable hub on both flanges. Made in sizes from No. 4 to 10 by *T. B. Wood's Sons Co.*, Chambersburg, Pa., the hub has high-strength cast-iron flanges with integrally-cast lugs machined for balance. Neoprene or leather intermediate discs are furnished.

• Lube for Hot-Running Units

Especially recommended for shovels operating close to their upper limits, and for hot-running crushing plants, shaker screens, hot mix plants, and wheel bearings where moisture and temperatures are excessive, a new heavy-duty lubricant has been developed by *D-A Lubricant Co.*, Indianapolis. 23. Known as D-A Lithium, Extra Heavy, it is designed around an unusually heavy base oil and an improved Lithium stearate to combine wear resistance with efficiency at extreme temperatures.

• TC Aids Performance

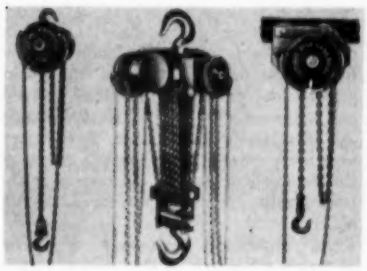
Incorporating torque converters into its HM payloader tractor-shovels and switching and towing units has considerably improved performance, the *Frank G. Hough Co.* reports. By reducing the amount of clutching and shifting, the TC makes life easier for the driver and protects the power train components against load shocks, reducing maintenance and prolonging the life of the unit. Working in conjunction with the Payloader's 4-speed, full-reversing transmission the converter multiplies the torque output of the engine in direct proportion to the load requirements, to provide a much smoother tractor-shovel drive than has previously been available.

• Tractor-Loader "Swings It"

A unique new loader attachment for tractors, featuring a 180-deg. swing for loading and dumping, has been developed by *Wagner Iron Works*, Milwaukee. Product of five years of research, the loader eliminates tractor maneuvering. Its powerful boom is capable of executing a 90-deg. swing to the right or left for loading or dumping loads up to ½ ton, and lifting or crowning to a height of 10 ft. The unique design requires no stabilizers. Wheel weights plus dual rear wheels offset tipping tendencies.

• Expand Hoist Line

A total of 55 different models and sizes of spur gear hoists have been added to the line of the *Coffing Hoist Co.*,



Danville, Ill. New units include 15 sizes of single- and multiple-chain hoists in capacities up to 25 tons, plain and geared Army type hoists up to 10 tons, low headroom hoists to 24 tons, clevis connected hoists to 10 tons, and extended hand wheel hoists to 3 tons.

• One of the biggest permanent Alnico pulleys built peeps from behind the beam, right, in Alcoa's Mobile bauxite plant. Homer Mfg. recently installed the 42-in. dia. unit to handle a 600-tph 36-in. belt. Loads often run 8-in. deep.

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Some time ago I received an interesting letter as follows: "I am the sole owner of a stone products company, and am contemplating taking in a partner on a 50-50 basis. Now the question arises how to protect ourselves from each other's debts that may arise. Would you suggest a regular partnership? I would appreciate an outline of a partnership, and also other law. Under the partnership setup we intend to do business under the writer's name as it is now. My partner will be silent. Does that change the partnership in any legal way?"

After I had spent considerable time in locating relevant higher court decisions, here is the law:

One Partner Is Liable

While the important advantage of an ordinary partnership business is that two or more persons may unite their money, labor, services, and ability for the purpose of operating a business, a real disadvantage of a partnership is that any one partner is personally liable for the total debts or obligations of the entire partnership, providing the other partners are insolvent. Of course, if all partners are financially responsible, each partner must pay a proportional share of the assumed debts and obligations of the partnership. A silent partner is equally liable.

An important advantage of incorporating a business is that a corporation never is liable for any act of an employee not within the scope of the employment, or for contracts not within the scope of the business as defined by the corporation's charter, and not authorized by the directors. Moreover, any person who transacts business with a corporation is bound to know that the official or employee who assumes to represent the company is legally authorized to bind the corporation. Otherwise the corporation is not liable.

On the other hand, no member of a partnership may avoid liability for debts pertaining to the business which were contracted or authorized by any other partner. In fact, a partner may remain liable even after he sells the business, or any interest therein.

For example, in *Johnson Company v. Maddux*, 221 S. W. (2d) 948, the testimony showed facts, as follows: Two persons, named Maddux and Shipley, were partners doing business as the Blue Company. This partnership purchased on credit merchandise and other accessories from the Johnson Company. Without giving the latter company any notice, Maddux sold his interest and withdrew from the partnership. Thereafter, the other partner continued to purchase merchandise and accessories from the Johnson Company. When the bill had amounted to considerable money and Shipley, the remaining partner, failed to pay the account, The Johnson Company sued Maddux to recover the amount due. In holding Maddux liable, the higher court said:

"The application of the merchandise is not the question before this court, and upon the agreed statement of facts, we hold that the plaintiff (Johnson Company) was justified in charging the account to the partnership. . . . After dissolution a partner can bind the partnership . . . provided the other party to the transaction had extended credit to the partnership prior to dissolution and had no knowledge or notice of the dissolution. . . . The plaintiff (Johnson Company) was given no notice of the dissolution of the partnership."

As mentioned above, one partner and only one partner, may be responsible for the total amount of partnership debts, although these debts greatly exceed the assets of the business. In other words, if only one partner is financially responsible, he is obligated to pay *all* debts incurred by *all* the partners in the partnership business. This is so, although such debts are authorized solely by a partner who has little or no financial investment in the partnership. This law also is applicable to a "silent" partner.

Another important point of law is that if one partner embezzles or "steals" funds from a partnership, he cannot be prosecuted for embezzlement or theft. This is so because all partners are owners in the partnership, and the law holds that an owner cannot steal from himself. (See *Hoose*, 205 S. W. (2d) 875.)

Distinctions of Liability

It is important to know that either an individual, a partnership, or a corporation can be equally and fully liable on a contract or debt made by an employee who is properly authorized to represent and obligate his employer in the making of the specific contract. Quite obviously, the kind of testimony and evidence necessary to prove that an employee was properly and legally authorized to represent an individual, is different from the testimony and evidence necessary to result in a partnership or corporation being liable under the same circumstances.

Of course, partnerships do not have this favorable advantage, because a partnership may always properly authorize an agent to make enforceable contracts. Hence, while a corporation can avoid liability on a contract or debt made by an agent not duly authorized, this is not so for individuals or partnerships.

Modern higher courts consistently hold that any financially responsible general partner is liable for all debts of a partnership. Recently, for example, a higher court held a single partner liable for payment of all debts of the partnership amounting to $75,000, although the partnership consisted of six partners. On the other hand, the higher courts in most states hold that a partner may limit his liability as a partner by recording a contract containing the limitation.

For example, in *Rathke v. Griffith*, 218 Pac. (2d) 757, the testimony showed facts as follows: Mr. Griffith, in company with several others, executed a contract known as "Articles of Limited Copartnership", which provided that the parties were associated under the firm name of Midfield. In this contract Griffith was described as a limited copartner, and his liability was limited to $1,000. The Midfield in the course of time contracted considerable indebtedness. Suit was filed by the creditors against Griffith on the contention that he was liable as a general partner for all debts of the partnership. However, in view of the facts that Griffith had signed the "limited" partnership contract which limited his liability to $1,000, and that this contract was recorded in the county in which the Midfield was located, Griffith was held not liable.

The court explained that Griffith would have been liable if the limited partnership contract had not been properly recorded.

Cause of Death

A reader asked this question: "One of our employees was killed with no witnesses to the accident. How will the court decide whether we are liable for payment of compensation to the employee's dependents?"

Last month a higher court answered this question as follows: The death of an employee from accident, before he has an opportunity to tell why he was at the place where the accident happened, always leaves his dependents unable to present much evidence. In recognition of that fact, courts in death cases generally are satisfied with very scanty circumstantial evidence that the accident arose out of, and in the course of, the employment.

$60,000 Damages

According to a late higher court decision, an employer is legally responsible for furnishing his employee a reasonably safe place in which to work. The employer's failure to do so renders him liable in damages.

For illustration, in *McGillick v. Valcante Construction Corporation*, 117 N.Y.S. 886, the testimony showed facts as follows: A man named McGillick

was an operator of a crane. He was engaged in lifting earth over a wall and depositing it in a space behind the wall. The wall collapsed and McGillick was severely injured. McGillick sued his employer for damages on the theory that he was responsible for the condition of the wall and on the further theory that he permitted McGillick to work when no support for the wall had been provided.

The jury held the employer liable in $100,000 damages to McGillick. The higher court reduced the damage allowance to $60,000.

No Consideration

Recently a reader asked these questions: "What is known as 'consideration' for a contract to make it enforceable? If I make a promise to a customer, can he hold me to it?"

The answer is: "Consideration" is anything of value. A mere promise is not enforceable, unless the other party also offered something of value.

For example, in *Olson v. Zarco, Industries, Inc.* 108 N. E. (2d) 32, it was shown that a contractor had a mechanic's lien for the balance due on contract to do cement work on a property owner's premises. The latter asked the contractor to waive the lien. This the contractor did. The property owner refused to pay $790 due, and the contractor appealed to the higher court.

It is interesting to observe that this court held that since the property owner had given the contractor no "consideration" for releasing and waiving the lien, the contractor was not barred from filing a suit to foreclose a mechanic's lien for the balance due on the contract.

On the other hand, the higher courts hold that where a person makes a promise conditioned upon the doing of an act by another, the contract is not void for want of consideration. So held a higher court in its decision rendered a few weeks ago. See *Harris v. C. S. & G. Corporation*, 72 S. E. (2d) 329.

The evidence showed that one Harris, who was employed by the C. S. & G. Corporation, went to his employer and told him that he "could no longer afford to continue" such employment for the amount of the compensation which he was then receiving and that he would seek other employment. Harris alleged that his employer promised to give him 10 percent of the capital stock of the corporation, or the appraised value thereof, whichever might be higher, if he would not quit the employment. After six years Harris was discharged from his employment. He sued to recover the promised 10 percent of the stock. The higher court held Harris entitled to the stock or $25,272.10, and said:

"It is well settled that a contract made under such circumstances is supported by a valid consideration. If the purpose and effect of the executory promise of a bonus is to induce the employee to refrain from exercising his liberty of quitting and, in reliance thereon, he does so refrain, for the period specified, there is sufficient consideration to render the contract enforceable."

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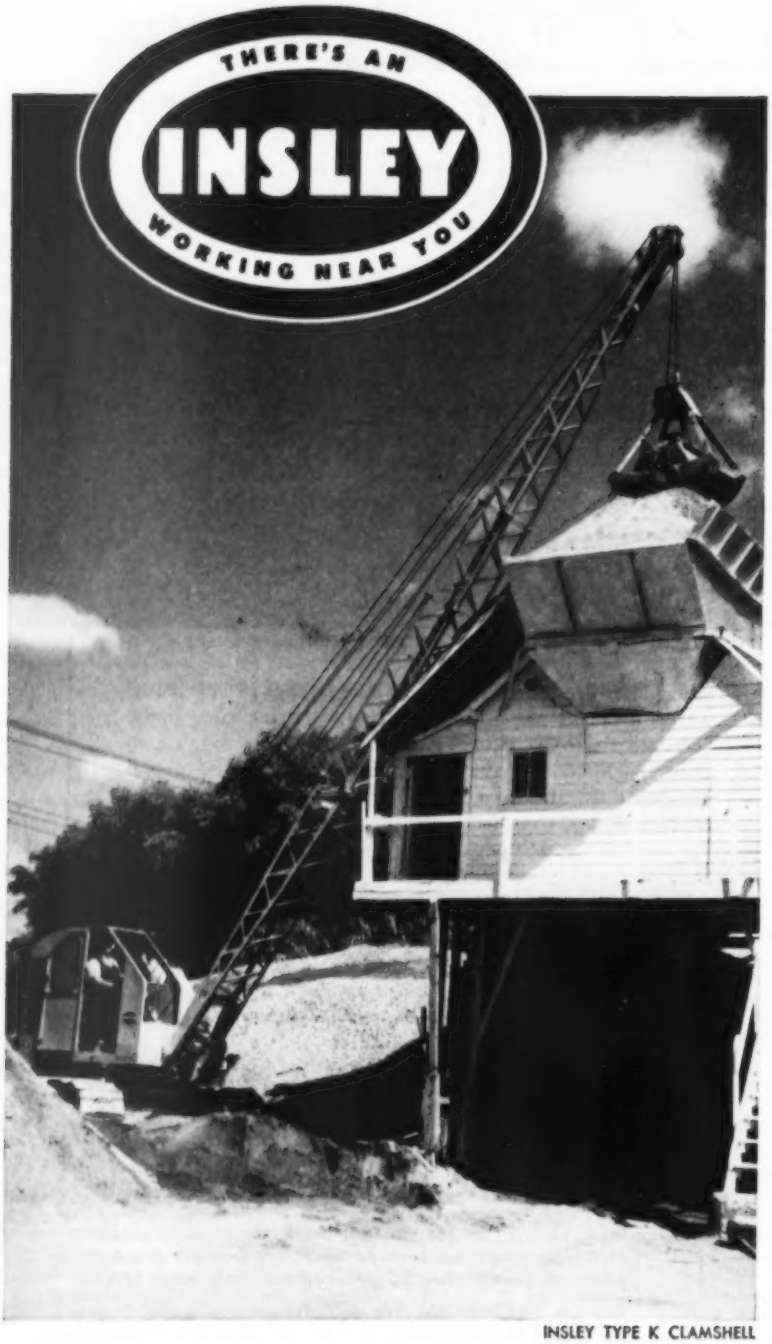

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Lease Is Valid

A reader asked this question: "If a sand-and-gravel operator takes a lease from a property owner, does the lease remain valid and enforceable if the property owner dies and no mention is made in the lease contract that if the property owner dies, the lease remains in force?"

A few weeks ago a higher court answered this question in the affirmative and also held that a renewal clause remains enforceable.

For example, in *Moore v. Schultz,* 91 Atl. (2d) 514, the testimony showed these important facts: In 1940 a property owner named Moore signed a written lease contract with one Schultz in which Schultz was given the "exclusive right to enter upon her premises" and "to remove sand and gravel therefrom". The terms of the contract provided that the "privilege" should extend for a period of ten years from the date the contract was signed with the option accorded Schultz to renew the "privilege" for a further period of ten years. Schultz agreed to pay Moore 10 cents per cubic yard for the sand and 20 cents per cubic yard for the gravel which he would remove, subject to certain contingent market price increases.

Moore died in 1941, and her son acquired the ownership of the premises on which the sand and gravel were located. Schultz installed machinery and other appropriate equipment on the premises and continued to exercise privilege or lease in pursuance of the agreement until his death in 1950.

This question was presented the court: Can Schultz's heirs continue to extract sand and gravel from the premises? Although Moore's son, who now owns the premises, argued that Schultz's death automatically cancelled the privilege or lease, the higher court held that Schultz's heirs may continue to operate under the original contract signed in 1940, and further that they can renew the privilege or lease for another ten years. The court said:

"A simple license associated with the use of land is in the law a mere privilege or permission. Where a profit is in gross, it is true that it is in the nature of a personal privilege, but it is nevertheless a distinct, independent object of ownership which is also alienable, assignable, and inheritable."

Excess Premium Is Refunded

According to a late higher court decision, if an insurance company collects more insurance premiums than the amount of the policy, the insurance company cannot be compelled to pay the greater loss but it is liable for repayment to the insured of the excess premium.

For example, in *Sands v. Iowa,* 55 N. W. (2d) 572, the testimony showed facts, as follows: An insurance company issued to one Sands, a property owner, an insurance policy for $2,500 on a building. Soon afterwards Sands improved the dwelling. Then the insurance was increased to $4,000. Later the insurance company issued an endorsement again increasing the insurance,

which stated the amount of the increase as $3,000, the total amount of insurance in one place as $5,500 and in another place as $7,000, and that the premium due to extend the insurance would be $38.08, the correct annual premium upon $7,000 insurance.

When the building burned, the insurance company refused to pay $7,000, on the grounds that although it collected premiums for $7,000 protection, yet the amount of the insurance was listed in one place in the policy as $5,500 and in another place $7,000.

It is interesting to observe that the higher court held the insurance company liable for only $5,500. The insurance company paid back to Sands the amount of $16.32 which was the difference between the premium on a $5,500 policy and a $7,000 policy, for which Sands had paid. The court said:

"The error in the amount of premium in the renewal certificates did not prejudice plaintiff (Sands) except that he paid a total of $16.32 too much for the renewals."

Must Guard Leased Property

Recently a higher court held that a company which has a lease on real property is responsible for materials which disappear, or are illegally removed or stolen from the property.

For example, in *Thompson v. Clark*, 257 S. W. (2d) 42, the testimony showed facts as follows: A sand and gravel company held a state permit to remove sand and gravel from a specified area in a river on a royalty payment basis. Another company went into this area and removed over $1,500 worth of sand and gravel.

The higher court held that the permit holder must pay to the state the agreed royalty on the sand and gravel removed by the other company. The court said:

"We think that the rule requiring a lessee to develop an area assigned to him in order to provide the lessor with royalties reasonably to be expected, requires the lessee to exercise reasonable care to prevent depletion by trespassers."

Therefore, it is quite apparent that a company which holds a permit to remove mineral products from real property must exercise reasonable care to prevent others, including trespassers, from removing material from the leased property.

Outside Scope of Employment

Modern higher courts hold that an employer never is liable in damages for negligence of an employee who acts outside the scope of his regular employment.

In *Willis v. Walker*, 239 S. W. (2d) 174, the testimony showed these facts: A truck driver named Shaw was authorized by his employer to take the truck to a service station for repairs. While he was there, Shaw threw a match into a mixture of water and gasoline which was being drained from a motor truck owned by one Willis. The truck burned, and Willis sued Shaw's employer for damages.

It is interesting to observe that the higher court refused to hold in favor of Willis. The court explained that Shaw was employed to drive the truck and,

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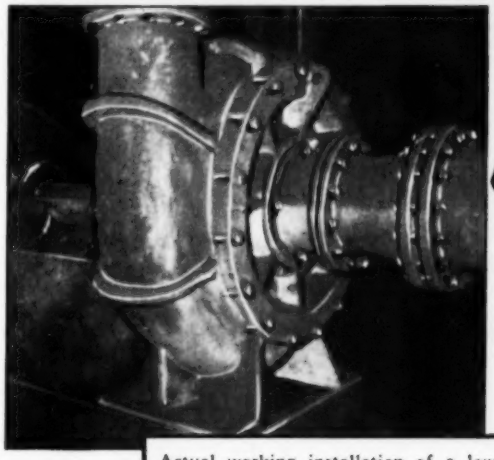

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therefore he acted "outside the scope" of his employment when he threw a match into the inflammable liquid.

Mortgagor Gets No Notice

Recently a reader wrote as follows: "If a purchaser or mortgagor of quarry equipment fails to receive a notice sent by the holder of the defaulted mortgage and then the holder sells the equipment to recover the amount due from the purchaser, does this result in liability of the holder of the mortgage to the purchaser?"

A late higher court decision answered this question in the negative. For example, in *Midland Company v. White*, 109 N. E. (2d) 338, it was shown that a dealer sold a machine to one White and took a mortgage to secure the balance due. This mortgage was properly and legally recorded. In the mortgage was listed the address of White, the purchaser and mortgagor. Later when White defaulted in making the agreed payments, the holder of the mortgage sent a notice of the intended sale by registered mail to White's address, shown on the mortgage. This notice included the time, place, and minimum price for which the mortgaged machine would be sold, together with the information that White would be held liable for any deficiency resulting from the sale. This notice never reached White, due to a mistake made by the postal authorities in forwarding the letter. The machine was sold by the holder of the mortgage to satisfy the mortgage. White sued the latter and proved that long before the notice was mailed out, he had notified the dealer that his address had been changed from that given on the mortgage. At this time White gave the dealer his new address.

Notwithstanding this evidence, the higher court held the dealer not liable, and within his legal rights in sending the notification of the intended sale to White's address as listed on the mortgage. This court said:

"It should be noted the statute provides that the mortgagee shall give notice to the mortgagor personally or to the address given in the mortgage. The legislature made no provision for a situation where the mortgagor moved, even though that fact is known to the mortgagee. It is clear to me that where the mortgagee sends a notice to the address given in the mortgage, that is a compliance with the statute."

Gypsum and Gypsum Products Show Decline in 2nd Quarter

Domestic mine production of crude gypsum during the second quarter of 1953, as reported to the Bureau of Mines, Department of the Interior, was 1,886,942 short tons—9 percent less than in the second quarter of 1952 and 18 percent below the record second-quarter output established in 1951.

Imports were 12 percent higher than in the same period of 1952; so the apparent supply of available crude was only 3 percent lower than in the second quarter of 1952. Second-quarter 1953 production of calcined gypsum was 5 percent higher than during the same quarter of the previous year.

traffic news

CENTRAL TERRITORY RAILROADS
Freight Traffic Committee

Docket 89970 (1)—Establish on sand (other than bank, glass, molding, silica, blast, core, filtering, engine, fire or furnace, foundry, grinding or polishing or loam sand) and gravel; carload minimum weight, 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Leesburg, Ind., to Bunker Hill (Naval Air Station) Ind., 107 cents net ton. To be issued to meet motor truck competition.

Docket 89985 (2)—Proposed to establish on lime, common, hydrated, quick or slaked, carload, from Ludington, Mich., to Teays, Ohio, 29 cents, minimum weight, 25 tons; and 34 cents, minimum weight, 15 tons.

Docket 89988 (1)—Proposed to establish rate of 106 cents per ton on stone and crushed stone screenings, in bulk, in open-top cars; carload minimum weight, 90 percent of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply from St. Paul, Ind., to Cincinnati, Ohio.

Docket 90012 (1)—Proposed to establish rate of 153 cents per net ton on limestone, lump or crushed, in open-top cars; minimum weight, 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Blissfield, Mich., to Fremont, Ohio. To expire six months after the effective date.

Docket 90030 (2)—Proposal to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass grinding or polishing loam, molding or silica) and gravel, in open-top cars; minimum weight, 90 percent of marked capacity of car except that when car is loaded to full visible or cubical capacity, actual weight will apply from Indianapolis, Ind., to Noblesville, Ind., 80 cents net ton.

GENERAL FREIGHT TRAFFIC COMMITTEE
Eastern Railroads

Bulletin G-9028 (Shipper)—Proposed to establish rate of $4.90 per net ton on crushed stone, in bags, in closed cars; minimum weight, 30 tons, from Wausau, Wis., to Portland, Ind., and Indianapolis, Ind. Subject to ExParte 175-B increase.

Bulletin G-9047 (Shipper)—Proposed to establish, on limestone, natural, ground or pulverized, unburned, carload minimum weight 30 tons, from Carey, Ohio, to Kingsport, Tenn. In open-top cars—present, 522 cents per net ton; proposed, 431 cents. In closed cars—present, 612 cents per net ton; proposed, 481 cents. Subject to Ex Parte 175-B.

Bulletin C-1514-I, (Carrier)—Retarder, plaster or stucco; carload minimum weight, 30 tons, from Genoa, Ohio, to Boston, Mass. Rates from Genoa to points below in cents per 100 lb.

Akron, N. Y.	40
Boston, Mass.	57
New Brighton, N. Y., Philadelphia, Pa.	54
Norfolk, Va.	62
Plasterco, Va.	52

Subject to Ex Parte 175-B.

Bulletin N 1609-I (Carrier)—Proposed to establish on limestone, natural, ground or pulverized, carload, minimum weight, 30 tons from Madoc, Ont., to the following points (cents per 100 lb.):

Buffalo, Niagara Falls, N. Tonawanda, N. Y.	21 cents
Boston and Watertown, Mass., York, Pa.	30 cents
Erie, Pa., Fulton, N. Y.	24 cents
Holyoke, Mass., Hartford and New Haven, Conn.	28 cents
Newport Junction, Maine	31 cents
Newark, N. J., New York, N. Y., Springfield, Mass.	28 cents

Subject to Ex Parte 175-B.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-I311 (MRP 6828)—Slag, not expanded; minimum weight, 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Powerton, Ill., to St. Louis, Mo. Present, $3.60 per net ton; proposed, $2.01 net ton. Subject to Ex Parte 175-B.

Docket IRC 511-I313—Proposed to establish rate of 185 cents per net ton on limestone, agricultural (ground or pulverized); minimum weight, marked capacity of car, except that when loaded to cubical or visible capacity, actual weight will apply, but not less than 40 tons, from Quincy, Ill., to Sidney and Deer's, Ill. This rate applies in open-top cars not protected by tarpaulin or other protective covering. In closed cars or protected by tarpaulin or other covering, 201 cents per net ton. Rates subject to Ex Parte 175-B increase, and applicable only on Illinois intrastate traffic.

NORTH PACIFIC COAST FREIGHT BUREAU

Docket NC 3148 (Supplement 1 (C)—Proposed to establish rate of 70 cents per 100 lb.; minimum, 25 tons on stone, carload, Gardiner, Mont., to Wenatchee, Wash., minimum 25 tons.

Docket X-NC 3607 (S)—Proposed to establish through rates on limestone, crushed, ground or powdered, carload, Durkee, Oreg., to points south of Portland, Oreg., points in Washington and Lewiston, Idaho.

PACIFIC SOUTHCOAST FREIGHT BUREAU

Docket X 4129 (S)—Request to establish through commodity rates related competitively with rates from Sloan, Nev., on limerock, crude, crushed or ground, carload, Ivanpah, Calif., to Los Angeles,

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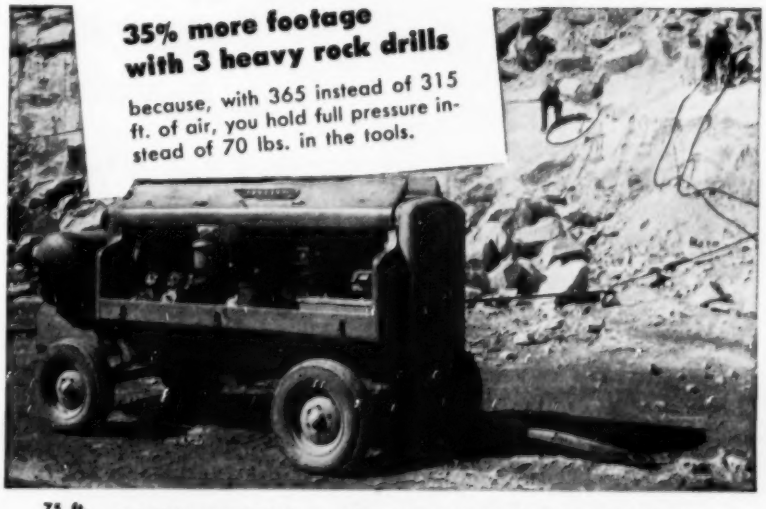
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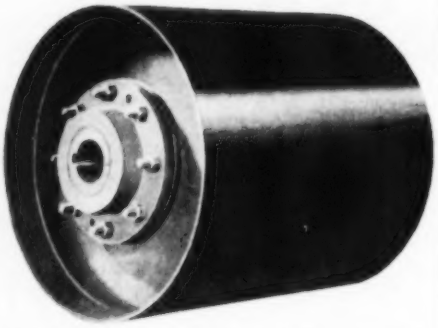

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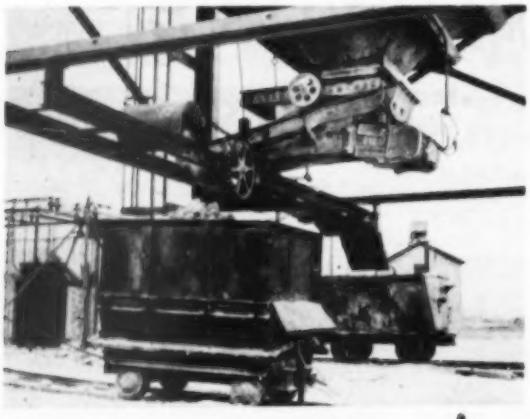

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Docket 4138 (S)—Request rate of 16 cents (minimum, 40 tons) on limestone, crushed, in bulk, in open cars, carload, from Nelson, Ariz., to Los Angeles, Calif.

Docket 4149 (S)—Request to establish alternate rates on lime, common, hydrated, quick or slaked, carload, from Sloan and Henderson, Nev., to Palmdale and Lancaster, Calif., 34 cents (minimum, 15 tons) and 32 cents (minimum, 30 tons).

Docket X 4164 (S)—Request rate of 3½ cents; minimum weight of marked capacity of car used on rock lime, carload, from Ellerbeck and Dolomite, Utah, to International and West International, Utah.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 16130 (b)—Proposed to establish rate of 526 cents per net ton on sand, ground or pulverized; carload minimum weight, 90 percent of marked capacity of car from Glass Rock, Ohio, to Nashville, Tenn.; 538 cents per net ton from Glass Rock, Ohio, to Chattanooga, Tenn.

Docket A 16177 (c)—Proposed to establish rate of 210 cents per net ton on stone, limestone or marble, described in item 430-B of Southern Freight Tariff Bureau 388-H from Rocky Point, Va., to Plymouth, N. C. Rate not subject to Ex Parte 162-6-8 increases.

Docket A 16306 (a)—Proposed to establish through rate of 479 cents per net ton on gravel; carload, or in open-top cars, from Gravelton, N. C., to Jackson, Ohio. Not subject to Ex Parte 162-6-8 increase, reflecting Cincinnati, Ohio, combination.

Docket A 10790 (E.R.R.'s (S) C-SFA 7230)—Proposed to establish rate of 431 cents per net ton in open-top cars and 481 cents per net ton in closed cars on limestone, natural; carload (30 tons), from Carey, Ohio, to Kingsport, Tenn. Not subject to Ex Parte 162-6-8 increases.

Docket A 16364 (c)—Proposed to establish on sand; carload minimum weight, 90 percent of marked capacity of car, from Marion, Ky., to the following points (per net ton):

	Open Cars	Closed Cars
Carmi, Ill.	189 cents	238 cents
Mt. Vernon, Ill.	213 cents	262 cents

Docket A 16376 (c)—Establish rate of 57 cents on stone, natural or cast (that is, limestone), dressed blocks, pieces or slabs, etc.; carload (30 tons), from Rockwood, Ala., to Jacksonville, Fla. Not subject to Ex Parte 162-6-8 nor 175 increases.

Docket A 16381 (c)—Proposed to establish rate of 985 cents per gross ton on phosphate rock; carload, 50 tons (or marked capacity of car if less), from Florida origins to Geneseo and Green River, Ill. Not subject to Ex Parte 162-6-8 increases.

Docket A 16386 (c)—Establish rate of 903 cents per gross ton on phosphate rock; carload, 50 tons, from Florida origins to Columbus, Ohio. Not subject to Ex Parte 162-6-8 increases.

SOUTHWESTERN FREIGHT BUREAU

Docket 66179 (C)—Proposed to establish rate on magnesite, dead-burned, from Maple Grove and Narlo, Ohio, to Houston, 55 cents, and Lone Star, Tex., 49 cents; minimum, 30 tons. Not subject to Ex Parte 162-6-8 increases.

Docket 66259 (S)—Establish rate on crushed stone, from Berthoud, Lyons, and Wilds Spur, Colo., to Clovis, N. M.; minimum weight, 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply, by amending item 2310-A of Southwestern Lines tariff 270-C, and by adding Clovis, N. M., as destination. Subject to rates of $5.25 per net ton in open-top cars and $5.73 per net ton in closed cars. Rates not subject to Ex Parte 162-6-8 increases.

Docket 66279 (s)—Proposed to establish rate of $9.54 per gross ton on rock phosphate, from Florida producing points to Crocker, Mo. Subject to Ex Parte 162-6-8; minimum weight, 50 tons or marked capacity of car if less.

TRANS-CONTINENTAL FREIGHT BUREAU

Supplement 3 to C-212 (S)—Amend Tariff 1 by publishing rates from Acme, Tex., to Los Angeles, 35 cents per 100 lb.; to San Francisco, Calif., 50 cents; minimum, 40 tons on gypsum or gypsum rock, crushed and/or pulverized, ground, not powdered, in bulk or in bags, carload. Not subject to Ex Parte 162-6-8.

Docket NM & A N/C 1368 Supplement 2 (S)—Proposed to establish rates from Acme, Tex., to Phoenix, Ariz., of 24 cents and to Yuma, Ariz., 29 cents; minimum, 40 tons on gypsum or gypsum rock, crushed and/or pulverized, ground, not powdered, in bulk or in bags, carload. Not subject to Ex Parte 162-6-8 increases.

FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

Docket TL M-3175 (Shipper)—Proposed to establish freight rate of $1.27 per net ton from Jamesville, N. Y., to Vestal, N. Y., on stone, natural (other than bituminous asphalt rock), crushed, without coating of oil, tar and/or asphaltum, in open-top cars not protected by tarpaulin or other protective coverings, taking Group Letter A; minimum weight, 90 percent of marked capacity of car. Subject to Ex Parte 175-B increase.

Docket X-E-41-1890 (S)—Proposed to establish rate of $1.50 per net ton on stone, crushed, in open-top cars, not protected by tarpaulin or other protective covering from Gilmore City, Iowa, to Omaha and South Omaha, Nebr. Subject to Ex Parte 175-B. Rate to apply *only* on movements of ten cars or more from one shipped at one point of origin to one consignee at one destination on the same day.

Docket X-E-41-1897 (C)—To amend the commodity description published in items naming specific rates on crushed stone to specifically apply on ganister rock, ground or not ground, in bulk, carload, from Sioux Falls, Dell Rapids, and Spencer, S. D., to Keokuk, Iowa.

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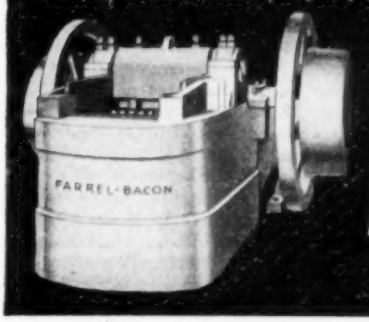
COMPLETE CRUSHING PLANTS
designed and equipped by **FARREL-BACON**



Farrel-Bacon provides a complete engineering service, including design of plant and supplying all equipment from primary crusher to bin gate. Jaw-type crushers are available in sizes from 60" x 48" to 10" x 7" *Write for complete information.*

FARREL-BACON
ANSONIA, CONNECTICUT

BA-5

Docket X-E-41-1898 (S)—Proposed to establish on stone, broken, crushed or ground; minimum weight, 90 percent of marked capacity of car, except that when loaded to full visible or cubical capacity, actual weight will apply, but not less than 30 tons, from Waterloo, Wis., to representative points shown below:

	Proposed Open Cars	Closed Cars
Benton Harbor, Mich.	$2.98	$3.48
Michigan City, Ind.	2.74	3.23
Columbus, Ohio	4.43	4.93

Subject to Ex Parte 175-B.

Docket E-41-1900 (S)—Proposed to establish on stone, broken, crushed, or ground, more fully described in item 5430-A of C.M.S.T.P.&P. GFD 2400-S; minimum weight, 90 percent of marked capacity of car, except that when weight of the shipment loaded to full visible capacity is less than 90 percent of marked capacity of car, actual weight will apply, but in no case shall the minimum weight be less than 20 tons, from Waterloo, Wis., to Calumet, Mich., and stations taking same rates: in open-top cars not protected by tarpaulin or protective covering, $4.41; in closed cars or cars protected by protective covering, $4.91.

Docket E-41-1904 (C)—Proposed to establish rate of 84 cents per net ton on sand or gravel; carload minimum weight, 90 percent of marked capacity of car, except that when cars are loaded to full visible capacity, actual weight will apply, but not less than 20 tons per car, from Muscatine, Iowa, to Burlington, Iowa. Subject to Ex Parte 175-B.

Docket E-41-1906 (S)—Proposed to establish on stone, broken, crushed or ground; minimum weight, 90 percent of marked capacity of car, except that when loaded to full visible or cubical capacity, actual weight will apply, but not less than 30 tons, from Waterloo, Wis., to the following (increased through rate from Waterloo): Bay City, Detroit, Ecorse, North Flint, and Saginaw, Mich., in open cars, 314 cents per net ton; in closed cars, 416 cents. Subject to Ex Parte 175-B increase.

Docket X-E-41-1915 (S)—Proposed to establish on sand, gravel, and crushed stone; minimum weight, 90 percent of marked capacity of car, except that where cars are loaded to full visible capacity, actual weight will apply but not less than 20 tons per car, from Douds, Iowa, to Centerville, Ia., 89 cents net ton; to Oskaloosa, Iowa, 90 cents net ton. Subject to Item Ex Parte 175 of Western Trunk Line Tariff 160-R.

Docket X-E-158-126 (C)—Proposed to establish on slag, broken, furnace; carload minimum weight, 90 percent of marked capacity of car, except that when actual weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, actual weight will apply, but in no case shall the minimum weight be less than 20 tons, from Mayville, Wis., to Merton, Wis., $1.10 per net ton. Not subject to ExParte 175-B increase. To expire one year from effective date.

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GUESSWORK
OUT OF DUST PROBLEMS

Don't guess about the scope of your dust problem or collection equipment requirements when a simple test will provide you with facts on every phase of your problem. Our new manual, "A Simplified Test Method for Dust Control Determination" describes this test method that will give you accurate facts on your dust problem, whether you are considering an initial installation of dust control equipment or expanding an existing system. You'll find the complete information on this test and its effectiveness will prove profitable reading.

For your copy, just clip this ad to your company letterhead and sign your name and title.

dustex CORP.
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Buffalo 25, N. Y.

trade notes

R. F. Tomlinson, manager of the conveyor department of the Oliver Corporation, A. B. Farquahar Division, York, Pa., was elected president of the Conveyor Equipment Manufacturers Association. He succeeds Harry C. Davis, general manager of the Kanawha Manufacturing Co., Charleston, W. Va.

Jervis C. Webb, president, Jervis B. Webb Company, Detroit, Mich., was elected vice-president; E. E. Boberg, sales manager, Standard Conveyor Company, North St. Paul, Minn., treasurer; and Russell B. Maas, president, Screw Conveyor Corporation, Hammond, Ind., secretary. R. C. Sollenberger was re-elected executive vice-president to continue as staff head of the association, with headquarters in Washington, D. C.

Named directors of the association were: Davis, Fred S. Wells, vice-president, Stephens-Adamson Manufacturing Company, Aurora, Ill., and D. E. Davidson, vice-president for sales, the Link-Belt Company, Chicago, Ill.

Roger T. Kelley, employee relations manager of Caterpillar's Milwaukee subsidiary, has been named labor relations manager of the Peoria plant of Caterpillar Tractor Co., Peoria, Ill. He has been industrial relations manager of Trackson Co. Succeeding Mr. Kelley at Milwaukee will be Robert L. Sutton, currently Trackson training manager, who has been in the Caterpillar organization for 17 years.

V. L. Snow, former manager of domestic sales for Euclid Road Machinery Company, Cleveland, Ohio, has been promoted to the position of director of sales. E. F. Armington, who has guided Euclid's sales activities for 22 years, is resigning from active service but will continue to serve as a sales consultant. J. E. Ehlert, former assistant sales manager, has been named manager of domestic sales to fill the vacancy left by Mr. Snow.

Barber-Greene Co., Aurora, Ill., has announced the appointment of Edward J. Curtin as sales manager of the company's northeastern sales area. This comprises all of New England, plus New York state and a part of New Jersey. His headquarters will be in Boston, Mass.

Mr. Curtin suceeds Earle F. Lamprey, who is being assigned to a new post in the company's New York office. He will

Edward J. Curtin

Earle F. Lamprey

supervise export activities in the New York area and will also be charged with government liason on export matters.

Barber-Greene has also announced the appointment of new sales managers for two of their domestic sales areas.

Kentner W. Shell, formerly a member of the company's field engineer section, has been named manager of the Number 2 area, with headquarters in Washington, D. C. He will replace Ralph H. Dano, who has been the company's Area 2 manager since 1950. Mr. Dano is being transferred to the company's Area 4 office in Aurora, Ill. During the war years, Mr. Dano was an official of the War Production Board.

Bernard E. Lindstrom has been transferred from his former post as manager of Barber-Greene's No. 4 Area and has been reassigned as manager of the new market development section of the company's sales force.

Clarke Equipment Co., Buchanan, Mich., has revamped its dealer organization in the Mid-west to handle the newly-acquired Ross straddle carriers and fork truck lines. Dealers affected by the plan are Modern Handling Equipment, Inc., Chicago, Ill.; Materials Handling Equipment Corp., Cleveland, Ohio; Material Handling Sales Corp., Detroit, Mich.; and Wisconsin Industrial Truck Co., Inc., Milwaukee, Wis. Clark acquired the Ross Carrier Co. earlier this year.

Sandvik Steel Belt Conveyors, a division of Sandvik Steel, Inc., New York, N. Y., announces the opening of new sales offices at 230 North Michigan Ave., Chicago, Ill., under the direction of Arve Larsson.

Elmer J. Lell has been appointed sales manager for Wall Colmony Corp., Detroit, Mich. He has served successively as sales engineer and assistant sales manager prior to his new appointment.

The Dingle-Clark Co., contracting engineers of Cleveland, Ohio, district representatives of The Cleveland Worm & Gear Co., and The Farval Corp., have announced the transfer of R. V. Robison, who has been associated with their Pittsburgh office as a sales engineer to Cleveland. Mr. Robison will be manager of the Machinery Division of the Cleveland territory.

Replacing Mr. Robison in the Pittsburgh office will be L. B. Abrams Jr., who will handle machinery sales in the Pittsburgh district.

Industrial Power of International Harvester Co., Melrose Park, Ill., announces the appointment of I. P. Payne as manager of industrial sales. Named as assistant managers of sales were C. E. Jones and W. M. Holland, with L. J. Lange as general supervisor of sales development, and E. A. Braker, general supervisor of sales engineering.

Also announced was the appointment of H. E. Broadwell as western regional sales manager, with Jack Bess as assistant sales manager.

Head of central regional sales will be L. A. Coomer, assisted by W. F. Hall.

E. L. Boughton will be manager and J. D. Gladden assistant manager of eastern regional sales. W. W. Black has been named general supervisor of service and parts merchandising.

Caterpillar Tractor Co., Peoria, Ill., announces the following changes of certain engineering department personnel:

G. E. Burks, who has been chief engineer at Peoria since 1942, becomes director of engineering. His responsibility will be to coordinate the program of all engineering groups serving the various plants and divisions of the company. John E. Jass will succeed Mr. Burks as chief engineer of the Peoria plant. Paul B. Benner will become assistant chief engineer at the Peoria plant, with supervision over design of motor graders and wheel tractors. Carl L. Kepner will become assistant chief engineer, with supervision of earthmoving equipment at the Joliet plant.

The company is providing additional space at Milwaukee for the engineering department already established under the supervision of L. C. Frank, chief engineer at the Trackson Co., a Caterpillar subsidiary.

Forest S. Burtch has been appointed product sales manager of the newly-formed Construction Materials Department of the John A. Roebling's Sons Corp., a subsidiary of the Colorado Fuel and Iron Corp. Elmer A. Trask, has been named to succeed Mr. Burtch as wire rope sales manager. Both men will work out of the corporation's Trenton, N. J., headquarters.

A rugged, easily portable unit for fast, economical drilling in all kinds of rock. Smooth, easy operation.

2000 powerful blows per minute plus high-torque, automatic bit rotation enable Syntron Rock Drills to cut time and costs on many drilling jobs in the quarry. No air compressor or other accessories needed.

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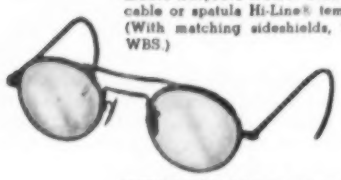
385 Carson Avenue — Homer City, Penna.

WILLSON
SAFETY SPECTACLES

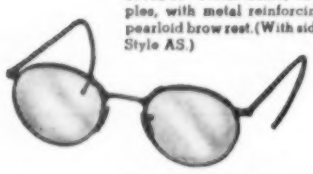
Everything you want in

- PROTECTION
- COMFORT
- STYLE

STYLE WB—Bronze-color, non-flammable butyrate frame. Standard cable or spatula Hi-Line® temples. (With matching sideshields, Style WBS.)



STYLE A—Metal frame, on-line temples, with metal reinforcing bar or pearloid brow rest. (With sideshields, Style AS.)



STYLE AH—Sturdy, single-bridge metal frame with Hi-Line® temples. (With sideshields, Style AHS.)

STYLE AV—Modern metal frame with Hi-Line® temples, metal reinforcing bar. (With sideshields, Style AVS.)

STYLE WK—Flesh-color butyrate frame with spatula or half-plastic, half-cable temples. (With sideshields, Style WKS.)

ASK YOUR WILLSON DISTRIBUTOR to show you the Willson Sample Kit of Safety Spectacles which includes lenses, frames and sideshields available.

More than 300 Safety Products — Carry This Famous Trademark
WILLSON

WILLSON PRODUCTS, INC.
102 Thorn Street, Reading, Penna.

Barber-Greene Co., Peoria, Ill., has just released a new 16 mm. sound, color film, "Conveyors Only LOOK Alike", describing Barber-Greene's complete line of portable belt conveyors. Three standard models of portable conveyors, a belt-type car unloader, plus many special units and accessories are shown in the film. Job shots, showing almost 50 different applications, illustrate the engineering and structural features of the equipment and its application to the fields of handling heavy, abrasive bulk materials such as sand, gravel, crushed stone, etc. Showings can be arranged by contacting any Barber-Greene representative.

Dwight H. Lory, former assistant to the general manager of the Norwood plants of the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has been named assistant manager of the Texrope Drive Section, located at the company's Cincinnati, Ohio, plant.

D. A. Milligan has been appointed vice-president in charge of sales of the American Tractor Corporation of Churubusco, Ind. He is leaving his post as sales manager of Harry Ferguson, Inc., to take on this new position.

Mr. Milligan will assume responsibility for increased distribution and sales in both the agricultural and industrial field, and will assist in the development and co-ordination of specialized equipment now under development for serving the agricultural, industrial, and materials-handling fields. He was a consultant to the Bureau of Public Roads in the selection of equipment for the Pan-American Highway prior to World War II.

The Timken Roller Bearing Co., Canton, Ohio, has announced the retirement of George W. Curtis, Milwaukee Division sales manager. Timken also announces that the company's Milwaukee Industrial Sales Division responsibility has been divided among the district offices in Milwaukee, Minneapolis, and Moline. Robert Morgan, district manager at Moline, Ill., continues in that post, while Floyd Hartshorn is the district manager of the Milwaukee office. Donald Van Orman has been appointed district manager at Minneapolis, Minn.

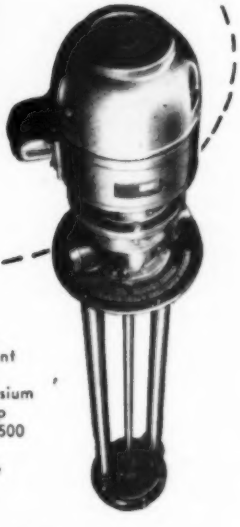
A licensing agreement under which its entire line of ore-dressing and mining machinery products may be manufactured and sold in Japan has been announced by the Western Machinery Company, San Francisco, Calif.

The company licensed is the Sumitomo Machinery Company of Tokyo and Osaka. The agreement, announced by Jack H. How, Wemco president, was reached after nearly two years negotiation, and limits his licensee to manufacture and sale in Japan, excluding it from other far eastern areas in which the local company already is represented.

Nagle **PUMP**

EARNS ITS SALT AT
SOUTHWEST POTASH CO.

A Nagle 10" Type "SW-B" frame 238X vertical shaft pump, with manganese steel water end parts, is giving excellent service at the Southwest Potash Co., Carlsbad, New Mexico, handling a slurry of sodium chloride and potassium chloride. Solids vary from a few percent up to 50%. Pump is 23' 6" long. Variable operating conditions call for 2500 g.p.m. at 80' of head and 5000 g.p.m. at 57' of head. If yours is a tough or abusive pumping job it calls for Nagle Pumps. Send for copy of "Nagle Pump Selector."



NAGLE PUMPS

NAGLE PUMPS, INC.
1257 CENTER AVENUE, CHICAGO HEIGHTS, ILLINOIS

PUMPS FOR ABRASIVE AND CORROSIVE APPLICATIONS

George Riem, who has been general superintendent of the Columbia Machine Works factory at Vancouver, Wash., for 15 years, has been named manager of a new factory branch at Mukwanago, Wis.

Sales and service for a wide area of the central and eastern states will be centered in the new factory branch. Existing parts and service depots in New Jersey, Virginia, and Florida will be maintained, supplemented by the Mukwanago branch.

George Riem

Robert R. Sheffer

Robert R. Sheffer has been appointed regional sales manager in charge of the Ohio, West Virginia, Michigan, western Pennsylvania and western New York territory of the Galion Allsteel Body Company, Galion, Ohio. He was formerly affiliated with Marion Metal Products Company, Marion, Ohio.

Robert Russell, president of Sterling Engine Co., Buffalo, N. Y., manufacturers of Sterling diesel engines and generator sets, announced that Admiral Curtis S. Smiley has been appointed to the executive staff as assistant to the president.

Admiral Smiley recently retired after 30 years' service in the U. S. Navy. At the time of his retirement, he was Chief of Staff, Commander, Eastern Sea Frontier Headquarters, New York City.

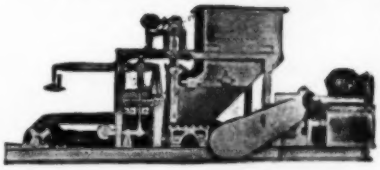
Opening of a new branch of McIlhany Equipment Co., Inc., at 2104 N. Hamilton St., Richmond, Va., has been announced. The concern is regional distributor for all types of Kochring Company construction equipment, as well as the products of its subsidiaries, Kwik-Mix, Johnson, and Parsons. T. D. Wilson will be office manager of the new branch with W. C. Harris as sales manager.

Kenneth W. Horsman, works manager of the Worthington Corporation, Harrison, N. J., has been appointed general manager of the company's Plainfield, N. J., works, responsible for engineering, manufacturing, and sales of the products at Plainfield. Paul J. Foley is general sales manager, and John F. Weissert is general superintendent of plant operations.

W. J. Fleming, formerly at Plainfield, has been transferred to Worthington's Holyoke, Mass., works where he will be in charge of the sale and distribution of portable air compressors and air tools.

"HIGH PRIORITY" SCALES

for Producers Handling BULK MATERIALS



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• • • are the "first choice" of experienced bulk material handlers in many industries.

Combining speed, accuracy, and automatic operation, these units eliminate "bottlenecks" in scaling, boost output, and assure product uniformity.

Poidometers are easy to install and operate. Sturdy and durable, they establish serviceability and economy records wherever employed.

Available with remote control devices for showing and changing feed rate, and with total weight recorders.

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Precision
WEIGHING
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OVER 1300
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NOTHING but NICKEL
. . . makes the true difference!
that's why
MANGANAL
U.S. Patents 1,876,738—1,947,167—2,021,945
11%-13½% MANGANESE-NICKEL STEEL

SPECIAL SHAPE APPLICATOR BARS

Last so much longer on Tractor Grousers

. . . NICKEL is the element in MANGANAL which makes welding and fabricating easy. Insist on MANGANAL, the toughest metal known not harmed by heat.

FREE
Send for your copy of Manganal Marketer #11.

Mill Depot Stocks: Newark • Wilkes Barre (Forty-Fort) • Indianapolis • Minneapolis

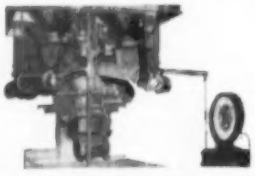
STULZ-SICKLES CO.
SOLE PRODUCERS 92 N. J. RAILROAD AVE. NEWARK, N. J.
NEAREST DISTRIBUTOR UPON REQUEST

Multiple Batch Mixes By Remote Control

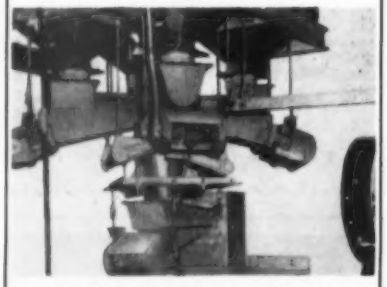
with

SYNTRON

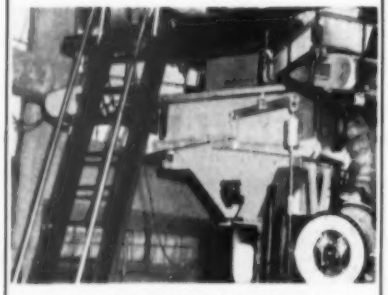
BATCH WEIGH PLANTS



Scale Controlled Operation



Blending and feeding two chemical ingredients into weigh hopper.



Four feeders blending different materials in one operation.

Syntron Batch Weigh Plants speed up bulk handling of many materials in batch mixing operations. Remote push button control insures accurate measuring . . . eliminates guesswork . . . weighs and feeds desired proportions. Completely automatic, scale controlled supply hoppers with instantaneous cut-off. Write for Free Catalogue Data.

SYNTRON CO.
385 Carson Ave. Homer City, Pa.

The Thew Shovel Company, Lorain, Ohio, announces the appointment of R. G. Thibaut as service manager and C. W. Raby, as assistant service manager. Mr. Thibaut succeeds the late R. P. Kelly.

Mr. Thibaut, who has been associated with the shovel and crane industry since

R. G. Thibaut

C. W. Raby

the age of 14, joined the firm in 1936 as assistant service manager. He will be responsible for the servicing of Lorains in the field throughout the world.

Mr. Raby joined Thew Shovel Co. 26 years ago, serving as traffic manager and manager of field service.

W. Cordes Snyder Jr., president of Blaw-Knox Company, Pittsburgh Pa., has announced a preliminary agreement for Blaw-Knox Company's acquisition of all outstanding stock of All Purpose Spreader Co., Elyria, Ohio.

Mr. Snyder said that acquisition of All Purpose Spreader Co. and its line of Apsco equipment used by contractors for road widening and paving construction, would complement Blaw-Knox activities and fill out its product line of road-paving equipment.

The promotion of John E. Powers and Howard M. Dodge as vice-presidents has been announced by the General Tire & Rubber Co., Akron, Ohio. Mr. Powers has been serving as general sales manager of plastics and special products, while Mr. Dodge is head of the Mechanical Goods Division.

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has officially assumed operation of the Buda Company, 72-year-old Harvey, Ill., firm, according to W. A. Roberts, Allis-Chalmers president. Mr. Roberts said that this addition to his company would be operated as "The Buda Company, a division of Allis-Chalmers."

Ralph K. Mangan, who has been with Buda for 36 years and president since 1950, will be in charge of the division, with the title of president and general manager. Operating as a division of Allis-Chalmers, The Buda Company will continue to manufacture, distribute, and service all items in its regular line of products.

Transfer of the assets of the Buda Company to Allis-Chalmers was at the rate of one share of Allis-Chalmers common stock for each 2 1/6 common shares of The Buda Company.

The board of directors of Dominion Brake Shoe Co., a subsidiary of the American Brake Shoe Co., New York, N. Y., have elected Thomas E. Akers as chairman, Kenneth T. Fawcett as president, and Maynard B. Terry as vice-president. Mr. Terry is also president of the American Brakeblok Division of the company.

Caterpillar Tractor Company, Peoria, Ill., is opening a new parts depot located in Denver, Colo., improving service for 14 Caterpillar dealers in Colorado, New Mexico, Wyoming, Utah, Texas, and Montana.

The appointment of three new regional managers and two sales engineers in construction tire sales has been announced by the U. S. tires division of United States Rubber Company, New York City, N. Y.

Ben F. MacCormack, new eastern regional manager, will make his headquarters in New York. Henry Hitchins has been appointed sales engineer for construction tire sales in the East, and will be under the direction of Mr. MacCormack.

C. N. Clabough has been named central regional manager, with headquarters in Chicago, Ill.; and Dugald McKinnon has been appointed western regional manager, with offices in Denver, Colo.

Joseph Bernat has been appointed sales engineer to assist Mr. McKinnon in the western region.

with the

Gilson Testing Screen

The GILSON Screen cuts out error and guesswork in meeting sizing specifications for crushed stone, gravel, slag, coal, ores, and similar materials.

You can own and maintain a GILSON Screen for only 85-cents per 1,000-tons production in your plant, according to our sales and service records.

WHY THE GILSON SCREEN?

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

GILSON SCREEN CO.
BOX 186 · MERCER, PENNA.

WHAT'S IN STORE FOR '54?

- ***Will the Economic Trend in the Pit and Quarry Industry Go Up or Down?***
- ***What About Long Range Planning?***
- ***Can the Industry Expect Continued Growth?***

1953 IN REVIEW...

- ***Has Construction Increased Over Previous Years?***
- ***What About Cement Production?***
- ***Have Aggregate Sales Increased?***
- ***What's the News of Other Non-Metals?***
- ***Who Has Developed New Machinery?***

The January 1954 issue of PIT AND QUARRY, the Annual Review and Forecast Number, is 'MUST' reading for everyone in the PIT AND QUARRY industries.

This issue, 1953 in Review and the Outlook for 1954, is one you will refer to many times during the year. The one issue you will want to keep handy and intact, quickly available for use in planning production and expansion.

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Enter my subscription to PIT AND QUARRY and start it with the January Review and Forecast Number ____ $3—1 year ____ $5—2 years ____ $6—3 years
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Send ____ copies of the January issue. (50c per copy, orders for less than four copies, please attach your check.)

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WHERE EXPLOSIVES RESEARCH PAYS OFF

To blast 305,000,000 tons of stone and nonmetal materials for America's ever-growing construction, road building, and steel industries requires more than 166,000,000 pounds of dynamite annually. Here, as illustrated above, is where explosives research pays off. Note the excellent fragmentation which minimizes secondary blasting . . . the low stone pile which increases and speeds up the production of the shovels.

Such results come not only from specially developed explosives and blasting supplies, but also by using the most modern blasting methods. Hercules' continuous research and extensive knowledge of field conditions are important to economical and efficient blasting in quarrying, coal mining, metal mining, and construction.

HERCULES POWDER COMPANY

Explosives Department, 960 King St., Wilmington 99, Del.
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

XR53-9

"Big wheel"

of the 6-wheelers

New INTERNATIONAL RF-190 Series. GVW ratings, 30,000 to 38,000 lbs. 143, 157, 175, 193, and 211-inch wheelbases. Gasoline, LPG or diesel power.

Keeping operating costs down in a mining operation demands a truck that's built to stand up and take it—and stay on the toughest job. It takes a truck with stamina and power for maximum loads, brutal off-highway hauls, and steep grades.

It takes the "Big Wheel" of the 6-wheelers—INTERNATIONAL. Proved performance, *plus* the famous INTERNATIONAL bogie with the third differential, has made INTERNATIONAL sales leader in the 6-Wheel field for 18 straight years.

Your INTERNATIONAL Dealer can offer you exactly the right truck for your mining operation—from *the world's most complete truck line.* The way to start cutting your truck operating costs is to see your INTERNATIONAL Dealer, today. Time payments arranged.

23 new 6-wheel models!

GVW ratings, 22,000 to 90,000 lbs. Engines from 130 to 356 horsepower. Choice of gasoline or LPG power. Diesel engines available in models with GVW ratings of 30,000 lbs. and over. Transmissions, axle ratios for any needs. America's most complete truck line—170 basic models from ½-ton pickups to 90,000 lbs. GVW off-highway models.

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International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

Better roads mean a better America

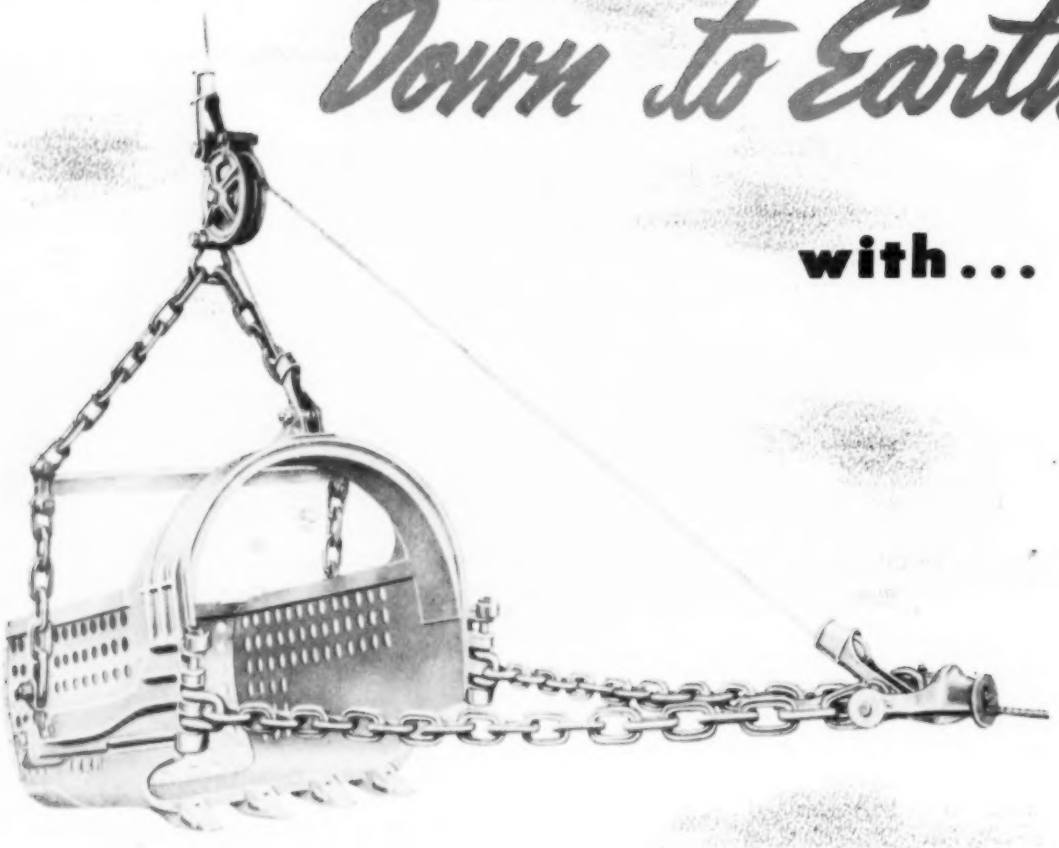
INTERNATIONAL® TRUCKS

"Standard of the Highway"

bring "cost-per-yard"

Down to Earth

with...



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3/8 to 40 Cubic Yards

Hendrix Lightweight Dragline Buckets

A TYPE AND SIZE FOR
EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

U.S. ROYAL

CON-TRAK-TOR

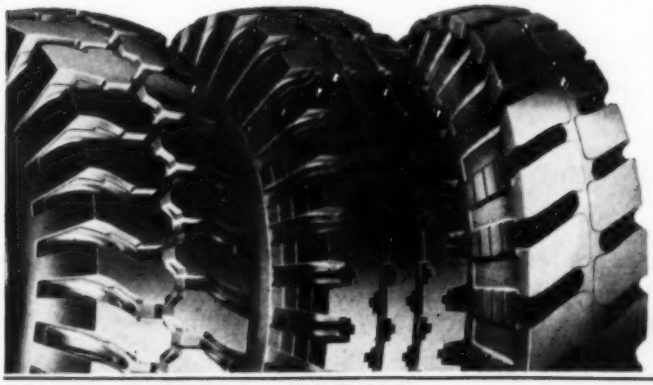
FULL LUG

Saves on Tire-Bruising Hauls!

The rougher your hauling jobs, the more you need the Con-Trak-Tor! It's built to *take punishment*—with triple-impact protection: extra rubber between plies, double shock-pads, rock-resister cap plies. It's built to *deliver traction*—with exclusive full-lug design. Mount it—and *save* from that day on!

Also available in All-Nylon for heaviest duty

Get Full Proof—Phone your U. S. ROYAL Dealer Now!



Specialized by U. S. ROYAL to do your jobs better!

U. S. ROYAL FLEETMASTER

Smooth rolling *on* the road, superior traction *off*. 70% more tread depth!

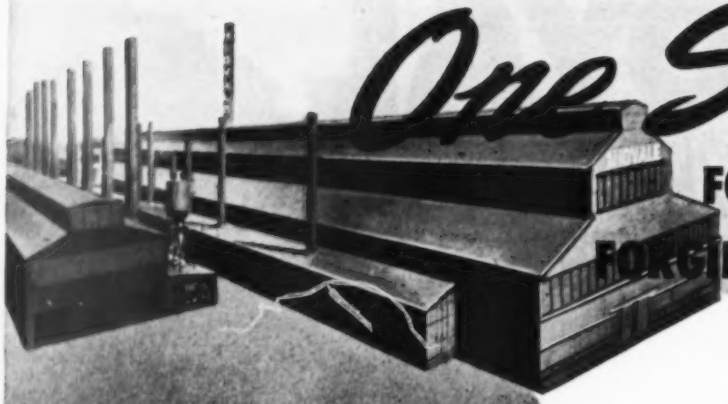
U. S. ROYAL ROAD TRACTION

New steering ease where most hauling is on-road at reasonable speed.

U. S. ROYAL LUG TRACTION

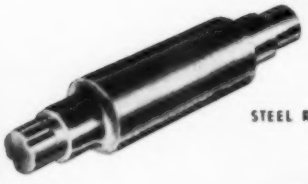
Best for high traction at low speeds off the road or on unimproved roads.

U. S. ROYAL TIRES *Product of* UNITED STATES RUBBER COMPANY

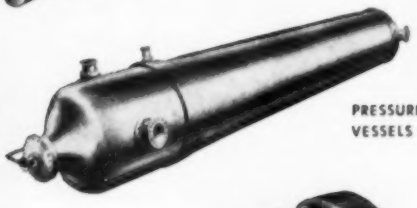


One Source

FOR "SPECIFICATION" FORGINGS AND CASTINGS



STEEL ROLLS



PRESSURE VESSELS

PRESS CYLINDER

RINGS

Name your requirements . . . show us your blueprints . . . and Midvale engineers and craftsmen working with the finest equipment will produce the forgings or corrosion and heat resisting castings you need.

Midvale can assure you of the finest in craftsmanship, precision and ultimate performance. Whether it is weldless gear rings for turbine speed reduction . . . cylinders for hydraulic presses . . . weldless high-pressure vessels for oil refining, gas reactions and steam generation or hardened and ground steel rolls for cold rolling steel, aluminum, copper, brass, zinc, foil, paper, linoleum, plastic and rubber, Midvale engineers can help you design them. Midvale craftsmen will build them to your most exacting specifications. Put your forging and casting problems in our hands . . . you'll be satisfied with the results.

THE MIDVALE COMPANY

NICETOWN, PHILADELPHIA 40, PA.

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MIDVALE

Custom Steel Makers to Industry

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

Pinellas Industries, Inc.

Builds new plant around 5 belts reinforced with Du Pont "Cordura"

Reinforced with "Cordura", the belt in foreground (24" x 598 ft.) dumps sand from the central stockpiles onto another reinforced belt (24" x 592 ft.) which carries it to batch bins.

The modern plant of Pinellas Industries, Inc., of St. Petersburg, Florida, is designed and built around a system of five conveyor belts, all sinewed for extra strength with Du Pont Cordura* high tenacity rayon.

The belts carry sand, stone and crushed granite (1) from hopper cars up to a distribution structure, (2) along a shuttle conveyor to central stockpiles, (3) through a tunnel below grade, (4) up to batch bins for ready mix and blocks, and (5) to a fifth belt serving the pipe plant batch bin. Manufactured by the Acme-Hamilton Rubber Company the belts handle moist materials . . . operate in heavy showers and hot sun.

Quarry operators have found that the low stretch strength of "Cordura" permits belts that are stronger, yet thinner and flexible for better troughing and training. Downtime for take-ups is reduced to a minimum.

Before you order your next conveyor belt, be sure to inquire about the use of "Cordura" rayon in belts. We'll send you the names of suppliers... together with full information about "Cordura". Just write for your free copy of "Sinews for Industry". Address: Textile Fibers Dept., Room 2520-Q, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

*REG. U.S. PAT. OFF.

Du Pont "Cordura" High Tenacity Rayon

STRENGTH AT LOW COST

Watch "Cavalcade of America" on Television

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

the NEW "111" CRUSHING AND SCREENING PLANT

...OFFERS YOU THESE ADVANTAGES

MORE PRODUCTION—All individual units other than the crushers are driven with separate electric motors permitting top operating speed and efficiency at all times. Crushers are driven directly from the diesel power unit.

LOWER MAINTENANCE—Independent electric motor drives eliminate the need for excess shafting, clutches and gearing.

ONE MAN OPERATION—The man on the platform with *push buttons* starts and stops the delivery conveyor, feed conveyor, screen, rotary elevator and plant conveyor giving him positive control of these units at all times.

GREATER PROFITS—Because of the versatility and engineering advantages of the "111" Plant, low cost tonnage paves the way for greater profits for the user.

Note: Austin-Western crushers are now being engineered and manufactured in Lima, Ohio, enabling us to maintain steady, top-quality production of crushers.

Austin-Western
CRUSHING, SCREENING and WASHING EQUIPMENT

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

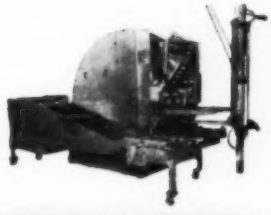
December, 1953

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

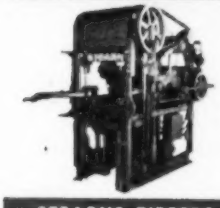
The A B C's *of* PROFIT *in* BLOCK-MAKING SPELL

S-T-E-A-R-N-S



STEARNS 15

STEARNS 50



STEARNS ZIPPERS

The measure of your success or failure in the concrete block-making business depends equally upon your market potential, the quality of your blocks and what it costs you to produce them. The latter two, in turn, depend upon the kind of machinery you use.

The outstanding success of the hundreds of owners of the Stearns 15 and 50 vibratory, plain pallet concrete block machines and the cored pallet Stearns Zippers is due in large part to the geographical locations of their plants. But equally important is the fact that those almost foolproof, mechanically perfect, push-button machines turn out *at minimum cost, top quality block, hourly, daily—with absolute uniformity* in their clean good looks, their size and their high compaction and load-bearing strength!

No seconds with a Stearns! No "builder beefs"! Just highly satisfied customers and high profits for you!

Thinking about a replacement or adding to your plant's capacity? Remember—there's no reason on earth why Stearns can't be *your* key to success, too!

GOOD BLOCKS MEAN GOOD CUSTOMERS

KEY TO SUCCESS

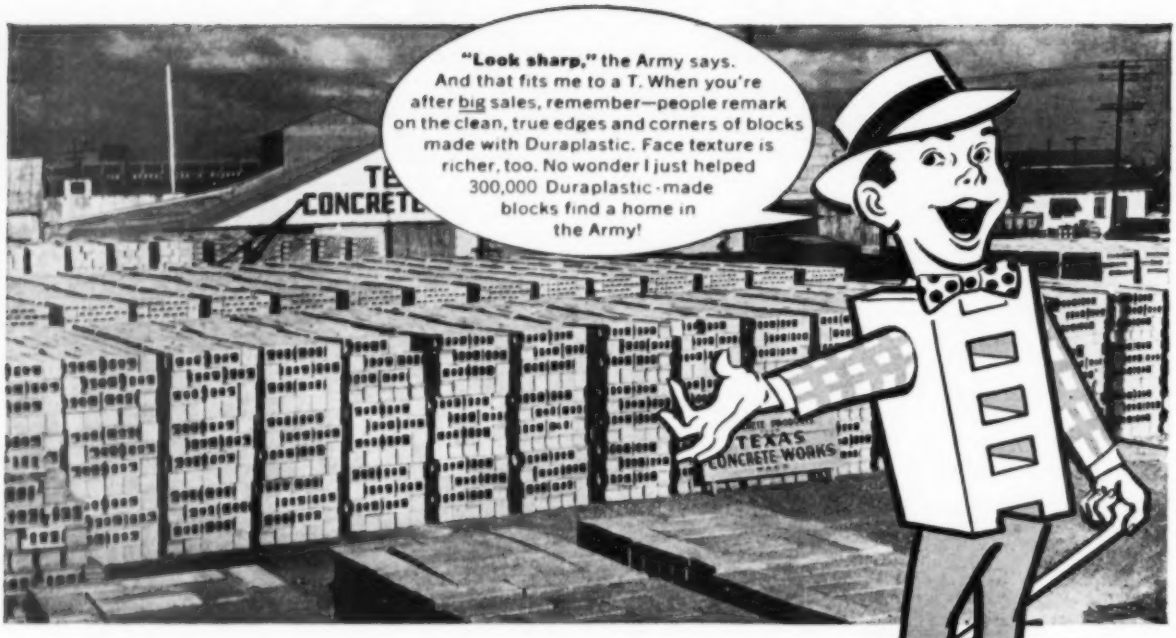
STEARNS

MANUFACTURING COMPANY • INC

ADRIAN • MICHIGAN

MIXERS • SKIP LOADERS • TURNTABLES • OFFBEARERS • PALLET RETURNS • SINTERLITE

"NIFTY" tells how to make a 300,000-block sale!


"Look sharp," the Army says. And that fits me to a T. When you're after big sales, remember—people remark on the clean, true edges and corners of blocks made with Duraplastic. Face texture is richer, too. No wonder I just helped 300,000 Duraplastic-made blocks find a home in the Army!
TEXAS CONCRETE WORKS

"Thrifty" says:

I can help you save a pretty penny on production. Fewer culls and throwbacks... less breakage in handling green products all add up. Manufacturers report real savings with Duraplastic.

WHEN the Texas Concrete Works at Waco landed a whopping order for 300,000 concrete blocks for Ft. Hood, it wasn't surprising. They use Atlas Duraplastic Cement exclusively, manufacturing blocks and pipe. And they know Duraplastic makes better-looking concrete products with increased resistance to passage of water.

YOU'LL FIND—Duraplastic Cement makes a more cohesive, rubbery mix which holds together better, feeds easily through machines. Unsurpassed for concrete block, brick, pipe, drain tile and silo staves.

YET DURAPLASTIC* COSTS NO MORE

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company

PQ-D-14-R

ATLAS® **DURAPLASTIC**

AIR-ENTRAINING PORTLAND CEMENT

Makes Superior Concrete Products at No Extra Cost

The CONCRETE MANUFACTURER

December 1953

Please Don't . . . .

WITH a whole raft of conventions about to tee off among the industries with which we are involved, this department would like to make a few mild but pointed suggestions to those of its readers who may appear as speakers on one or more of the forthcoming programs. Over the past decade we've spent approximately 200 working days listening to good, bad, and merely indifferent convention speakers, and it would seem to us an adequate compensation for some of the pain which that amount of exposure has necessarily cost us if we could influence just *one* speaker on *one* program to avoid a few of the deadlier errors we've noted.

Here, then, distilled from approximately a thousand hours of listening, are some of the "don'ts" which we think should be observed by convention speakers.

Don't waste time telling the audience how deliriously happy you are to appear before them, or subject them to a blow-by-blow account of what the program chairman said to you, and what you said to him, when he invited you to participate. Anybody in the audience who has ever been where you are damned well knows you've not particularly happy about it; and the remarks which pass between program chairmen and their intended victims are usually about as dull as anything that takes place in the entire realm of conversation.

Don't give your audience that dreary old business about how inadequate you feel to carry out the mission you've been assigned. If you really felt that way about it, you should have turned the assignment down cold.

Don't feel under the slightest obligation to tell a story unless you've got one that is both pertinent and funny, and unless some penetrating and usually adverse critic, such as your wife, encourages you to think you can do a fairly good job of it. In any event, make it short; and if it goes over, don't crowd your luck by trying another.

If there is a microphone, don't regard it as a crutch made for sissies with soprano voices. Without the mike the chances are that booming basso profundo you're so proud of won't carry beyond the third row. We've often wondered why program chairmen don't get their speakers together before each session for a few minutes of practice with the amplifying system.

If you can cover the subject which was assigned to you in ten minutes, don't feel obliged to rattle on for half an hour just because the chairman said you could take that long. There'll usually be a couple of windbags who will take twice the time alloted to them; and even if there aren't, it would be good clean fun for everybody concerned if the session actually broke up 20 minutes ahead of schedule.

William M. Avery

Another Leader★ IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!

★ This is the 104th of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Officials of the Wausau Concrete Co. Front Row, left to right: P. F. Hottol, Plant Mgr., C. W. Parsons, Pres., L. A. Clark, Sales Mgr. Rear Row, left to right: L. C. Dehnel, Office Mgr., W. E. Shymanski, Plant Supt., R. H. Molaun, Traffic Mgr., T. K. Solick, Sales Dept.

Front Pallet Feed Vibrapac Produces "WausaW" Quality Block with a Minimum of Downtime!

The Wausau Concrete Company began operations in 1919, manufacturing concrete silo staves, culvert and sewer pipe. A number of years later, the company switched to concrete products for both residential and industrial structures.

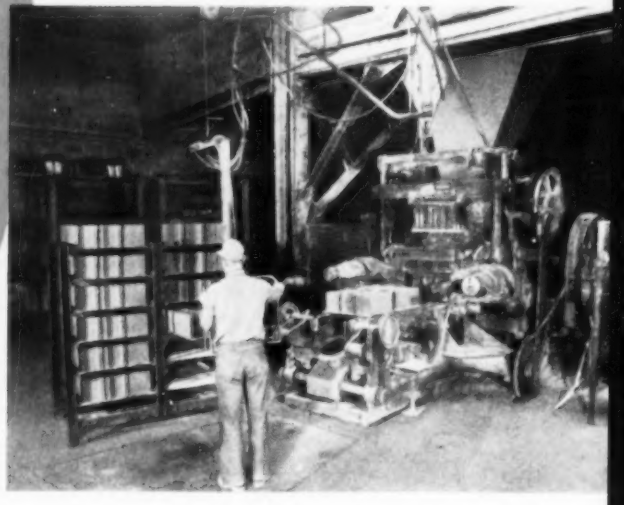
The increasing demand for high-quality concrete masonry units, in 1950, paved the way for a plant modernization program which included the latest type Front Pallet Feed Vibrapac with electrical control panel. This machine now produces three kinds of modular block — concrete, cinder and Waylite.

Ask any member of this progressive Wausau firm what feature of the Automatic Vibrapac appeals to them the most, and they will frankly tell you it's the continuous operation, day-in and day-out, of this high production machine.

BESSER MANUFACTURING CO.

Complete Equipment for Concrete Products Plants

ALPENA, MICHIGAN, U. S. A.



Besser Front Pallet Feed Vibrapac installed in the Wausau plant. Fully automatic. One man removes finished block with power off-bearing hoist, and, with no lost motion, returns empty pallets to Vibrapac. No manual lifting. More than a million 8" x 8" x 16" units (or equivalent) are produced and sold annually, using the catchy slogan:

"WausaW Concrete for Permanence"

BESSER

BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINE

A 7552-1PB-C

news of the concrete industries

● Officers elected at the recent organizational meeting of the Kansas Concrete Masonry Association (seated): Ray Browning (Capitol Concrete Products, Topeka), president; Roy Fankhauser (Masonry Products Company, Garden City), vice-president; (standing) Lyle L. Morgan (Salina Concrete Products, Inc., Salina), secretary; Otis Walker (Concrete Products Company, Junction City), treasurer; and R. J. Schmitt (United Cement Products, Wichita), vice-president.

William A. Maples Appointed A.C.I. Secretary-Treasurer

William A. Maples was named secretary-treasurer of the American Concrete Institute, Detroit, Mich., at a meeting of its board of direction in Houston, Tex., on October 28, 1953. Mr. Maples has been a member of the staff of the institute for the last five years as associate and managing editor of the Journal of the American Concrete Institute, and more recently as acting secretary-treasurer.

W. A. Maples

Mr. Maples is a 1932 chemical engineering graduate of Michigan State College, whose experience prior to joining the A.C.I. staff included work in the laboratories of the Ford Motor Company, Department of Public Works, City of Dearborn.

R. H. Corbetta Continues As N.Y. Concrete Board Chief

Roger H. Corbetta, president of the Corbetta Construction Co., Inc., New York, N.Y., has been re-elected chairman of the Concrete Industry Board of New York City for a third term. William J. McIntosh, district engineer for the Portland Cement Association, was elected secretary, and Dugald J. Cameron, president of the Concrete Reinforcing Steel Corporation, was re-elected treasurer.

The Concrete Industry Board, organized three years ago for the purpose of improving the quality of reinforcing concrete construction, is composed of representative firms in every phase of the industry, including contractors, architects, engineers, ready-mix producers, laboratories, and cement makers.

James A. White has been named sales representative for the Calaveras Cement Company in Stanislaus, Merced, and Mariposa counties of California. His headquarters will be in Modesto.

Southeastern Division of N.C.M.A. Holds 10th Annual Meeting at Charleston, S.C.

An exceptionally well balanced program, consisting of equal parts of business discussion, review of technical developments, and sheer holiday fun marked the 10th annual meeting of the Southeastern Regional Division, National Concrete Masonry Association, at Charleston, S. C., last month. The three-day affair drew a record total attendance of 272 men and women from the ranks of block producers, machinery manufacturers and sales representatives from all over the United States.

George W. Katterjohn, Paducah, Ky., and William R. Ireland, Atlanta, Ga., were reelected president and secretary-treasurer of the group, and Frank Williamson, Winter Park, Fla., Leon K. Camp, Columbus, Ga., and H. A. McGee, Orangeburg, S. C., were newly elected as vice presidents. Sam M. Bailey, Jackson, Miss., Henry O. Pommer, Memphis, Tenn., and Robert Radcliffe Jr., Mobile, Ala., were named to serve three-year terms on the board of directors.

The program included presentation of a preview of the national association's broad new promotional program, some good-humored criticism of the industry's products by an architect and a building contractor, a review of the status of high-pressure-steam curing, and a report on prestressing in Europe. Guest speakers who addressed the group on more general subjects included John Temple Graves, commentator and syndicated columnist, and William H. Gove, director of sales development, Minnesota Mining and Manufacturing Co.

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1,000 BLOCK PER HOUR (8" EQUIVALENT)

1,000 BLOCK PER HOUR (8" EQUIVALENT)

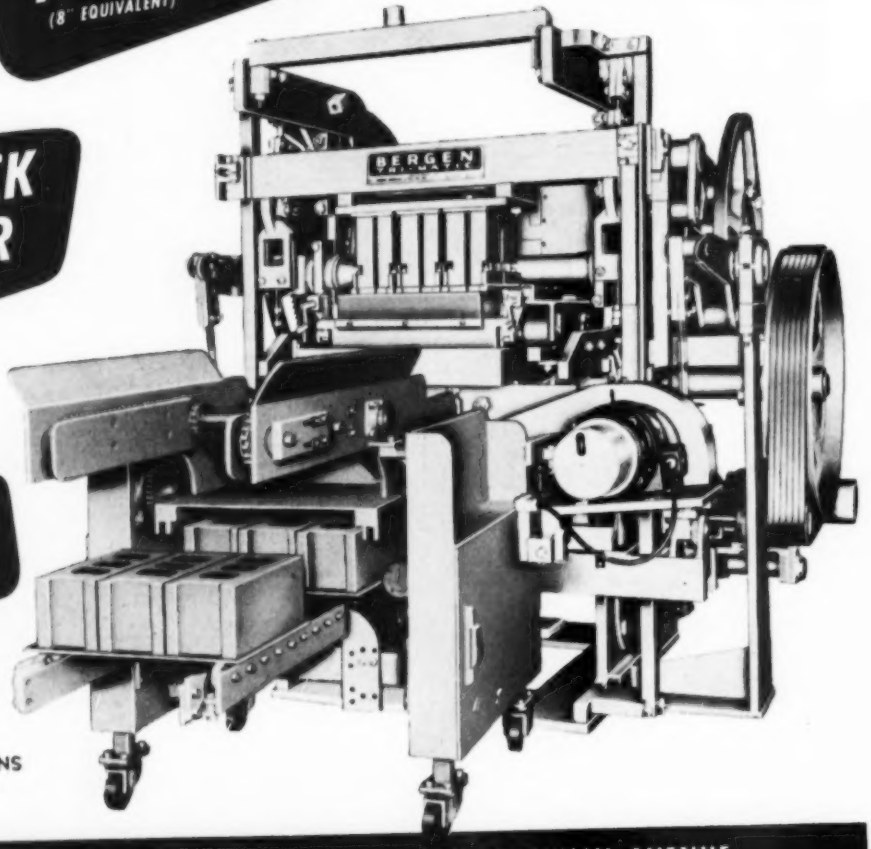
1,000 BLOCK PER HOUR (8" EQUIVALENT)

BERGEN TRI-MATIC

1,000 BLOCK PER HOUR (8" EQUIVALENT)

1,000 BLOCK PER HOUR (8" EQUIVALENT)

1,000 BLOCK PER HOUR (8" EQUIVALENT)



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- ON LEASE BASIS
- LEASE with OPTION TO BUY
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APPROX. SHIPPING WT. 14 TONS
(WITHOUT FRONT PALLET RETURN)

BERGEN MACHINE & TOOL CO., INC. 189 FRANKLIN AVENUE NUTLEY, NEW JERSEY

Concrete Found Successful In Aircraft Jig Parts By Boeing Engineers

The use of concrete for non-adjustable jig parts, considered one of the greatest potential strides in the development of aircraft jigs, has been revealed by Boeing Airplane Company in Seattle.

Aircraft jigs are the mechanical aids which hold a piece of work in the correct position during fabrication and assembly. Since the coming of mass production for World War II both the base and the adjustable parts have been constructed of steel, but in recent months Boeing has been using a concrete-base jig in its B-52 Stratofortress production line with extremely satisfactory results. As compared with the steel-on-steel jig, the cost of the new arrangement is approximately 25 percent less, and the time required to construct the concrete base about 75 percent less.

Another factor is space economy. Two B-52 stabilizer jigs have been mounted on the single concrete base, resulting in a one-third reduction of the amount of factory floor space originally needed to accommodate two stabilizer jigs. The concrete supports have still other advantages. It is easy to load assemblies into the jigs.

However, there probably will be one disadvantage in the very durability of the concrete bases. When it comes to dismantling, it may have to be done with jackhammers.

Universal Concrete Pipe Co. Develops Sewer Pipe Joint

A special type of joint, successfully used on pressure pipe, is now available on reinforced sewer pipe manfactured by the Universal Concrete Pipe Company, Columbus, Ohio.

Universal has trade-marked the name "Armored Joint" to identify the new pipe, which combines steel joint rings and long-lasting rubber gaskets that insure against leakage or infiltration.

The rings, embedded in the concrete pipe wall, are welded to the pipe's steel reinforcement.

The rubber gasket is seated in a special groove in one ring, so that it is confined and protected. The complete joint is said to provide ample flexibility to allow for normal contraction, expansion, and deflection.

"They've been looking for a permanent, rustproof, sturdy box car long enough—We decided to show 'em what to use."

William A. Haley, who was formerly assistant to the managing director of the American Concrete Pipe Association, recently joined the Universal Concrete Pipe Company as sales engineer for upstate New York.

Increase in Rates Due On Social Security Tax Beginning Jan. 1, 1954

The social security tax rate for persons whose work counts toward old-age and survivors insurance is scheduled to increase on the first of January. This scheduled increase in tax contribution is in accordance with the 1950 amendments to the social security law, and was enacted by Congress in anticipation of future obligations of the program.

Employees in jobs covered by the law will have 2 percent instead of 1½ percent deducted from their pay up to earnings of $3,600 a year, beginning with the first of January. Employers will contribute an equal amount.

The new rates will apply to all taxable wages paid after December 31, 1953, regardless of when earned.

The social security tax for the self-employed is scheduled to increase from the present 2¼ percent to 3 percent for the period commencing January 1, 1954. The self-employed whose work is covered by the law pay their tax just once yearly at the time of filing their Federal income tax return. They will pay the present 2¼ percent social security tax on their 1953 income that counts toward security. This will be due not later than March 15, 1954. Their first payments at the increased rate of 3 percent will be due March 15, 1955, for 1954.

In the meantime the Internal Revenue Service reports that employers will be furnished late this year with income tax withholding tables and Federal Insurance Contributions Act (social security taxes) tables reflecting rates for next year.

The next scheduled increase, six years from now, in 1960, will be to 2½ percent each for employer and employee, and to 3¾ percent for the self-employed

Coming Events

January 5-7, 1954—Atlantic City. 52nd annual meeting, American Road Builders' Association. Chalfonte-Haddon Hall.

January 17-21, 1954 — Chicago. **Tenth annual convention and exposition, National Association of Home Builders. Conrad Hilton and Sherman hotels.**

January 19 and 20, 1954—Milwaukee. 34th annual convention, Wisconsin Concrete Products Association. Plankinton Hotel.

January 24-27, 1954—Chicago. **Annual cconvention and exhibit, Mason Contractors' Association of America, Inc. Sherman Hotel.**

January 25 and 26, 1954—Niagara Falls, Ont., Canada. Fifth annual convention, National Concrete Products Association (Canada). Sheraton-Brock Hotel.

January 28 and 29, 1954—Toronto. **Conference on prestressed concrete, sponsored by the Extension Department of the University of Toronto.**

February 8-11, 1954—Washington, D. C. **34th annual convention, National Concrete Masonry Association. Shoreham Hotel.**

February 15-19, 1954 — Chicago. 24th annual convention, National Ready Mixed Concrete Association, with machinery exposition. Conrad Hilton Hotel.

February 22-25, 1954 — Denver. **Annual convention, American Concrete Institute. Shirley-Savoy Hotel.**

February 24, 1954—San Francisco. 4th annual convention and meeting, American Concrete Agricultural Pipe Association. Fairmont Hotel.

February 25-27, 1954—San Francisco. **46th annual convention, American Concrete Pipe Association. Fairmont Hotel.**

CANADIAN NEWS LETTER

Father Alphonse, deputy superior of the monastery, watches as Wilfred Gallant, one of three civilian employees of the monastery, takes a block from the mold. The heavy wooden bottoms used in the molds are stacked behind Father Alphonse, who wears the white robe and black cloak of the order.

PROBABLY the most unusual block-makers in Canada are the monks at the Trappist Monastery in Rogersville, New Brunswick, not far from Canada's eastern coast. These monks have been turning out concrete blocks since 1947, when they went into business to provide a cash income for the monastery.

The order has its own dairy, piggery, apiary and graden, and is almost entirely self-sufficient. It has established a market which is chiefly local, but blocks have been sold throughout the province.

Blocks are made on a Wettlaufer machine, which can turn out 1,000 units per day in 4-, 6-, 8-, and 10-in. sizes. The monks supply block in natural, red, or yellow.

A large supply of sand made the venture feasible for the monks. Their monastery is on the bank of a tributary of the Kouchilbouguac River, surrounded by picturesque New Brunswick woodlands.

Above: Drying operation in the steam room. The monks move the racks on a wheeled jack arrangement.

CONTROL of the Cooksville Company, Ltd., Montreal, Que., Canada, has been acquired by the Dominion Tar & Chemical Company, according to Arthur H. Martin, president of the latter concern.

The Cooksville Co. and its subsidiaries, the La Prairie Company, Inc., the Interprovincial Brick Co., Ltd., and the Aerocrete Construction Company, Ltd., operate plants at Cooksville, Scarborough, Milton, and Cheltenham, Ont., and at Delson, La Prairie, and Montreal East, Que. Products include concrete block, brick, and tile, and a lightweight aggregate known as Aerocrete or Haydite.

Below: Blocks are stacked in the monastery yard after curing. Father Alphonse, Wilfred Gallant and Father Edmund look over an impressive supply. New Brunswick is in the midst of a building boom, so blocks will find a ready market.

A.S.T.M. Committee C-13 Acts on Pipe Specifications At Chicago Meeting

On September 13-16 the American Society for Testing Materials Committee C-13 on concrete pipe met at the Sherman Hotel, Chicago.

The full committee took the following action: adopted a recommendation to include tongue-and-groove drain tile in Specification C118; altered C14 to include specifications for extra heavy non-reinforced concrete pipe in sizes through 24 in.; left at 52, 500-p.s.i. the tentative specification for strength of welded splicer, pending further study; delegated to subcommittees the work of (1) studying and reporting on the possible need for a specification for prefabricated concrete manholes and (2) correlating and reconciling the different steel areas in C75 and C76; passed a resolution to eliminate the use of rodded cylinders from C75 and C76 for sizes over 72 in. and for smaller sizes, as described by the consumer, and to use core tests instead; and raised certain tentative specifications to standard.

The subcommittee to prepare a draft on a low head concrete pressure pipe specification drew up tentative specifications for low head concrete force sewer mains and for low head concrete pressure pipe as used in irrigation practice. These drafts must go before the full committee at its meeting next year before they may be released.

N.R.M.C.A. Approves Revision Of Truck Mixer Standards

A newly-published technical bulletin is *Truck Mixer and Agitator Standards* (third revision) of the Truck Mixer Manufacturers Bureau. The publication has been approved by the National Ready Mixed Concrete Association, which is affiliated with the bureau.

Concurrent study was made of the bureau's standards and those of N.R.M.C.A., to attempt any reconciliation of the provisions deemed necessary. It is the purpose of N.R.M.A.A. officers soon to publish its own revised standards, and eventually to issue a book containing its standards, those of the Truck Mixer Manufacturers Bureau, and the specifications of the American Society for Testing Materials for ready-mixed concrete.

N.C.M.A. Asked to Promote Bomb Shelter Construction

A request was received recently by the National Concrete Masonry Association at Washington from Governor Val Peterson, administrator, Federal Civil Defense Administration, to urge persons living in potential A-bomb target areas to build home shelters in preparation for possible attacks.

Governor Peterson has asked N.C.M.A. to publicize the shelters developed by the Federal Civil Defense Administration in its information kit *Operation Doorstep*, which reported on the Yucca Basin, Nev., tests (see also THE CONCRETE MANUFACTURER, June, 1953).

S.W. Portland Cement Co. Host to Products Makers

More than 70 concrete-products makers, members of the Concrete Masonry Manufacturers' Association, Los Angeles, journeyed to Victorville, Calif., on Saturday, October 17, where they were the day and evening guests of the Southwestern Portland Cement Co.

The trip was arranged so that these cement users might see at first-hand just how the product they use in such great volume is made, and to inspect the new quarry and new production facilities currently being installed at Southwestern's wet-process operations at Victorville.

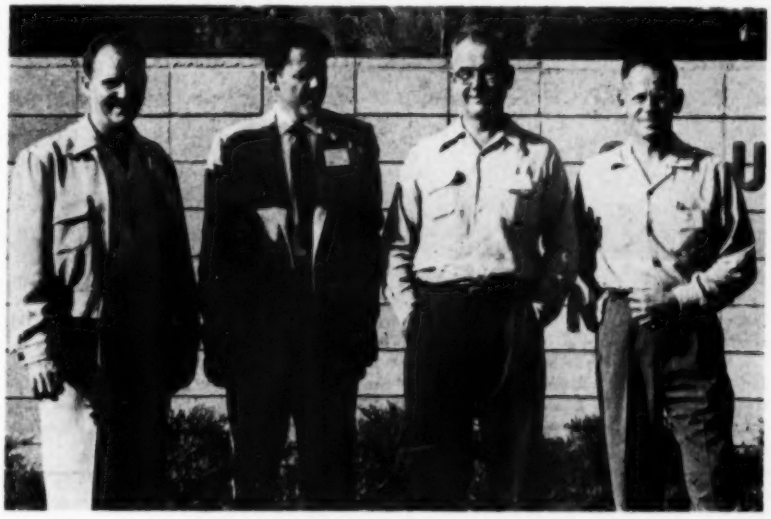
At the quarry, located some 16 miles from the plant, the visitors viewed the drilling and blasting operations and were amazed at the big new primary-crushing plant where an Allis-Chalmers 42-in. gyratory and two Pennsylvania impact crushers are designed to turn out up to 1,000 t.p.h. of limestone reduced to minus 1-in. size. They saw trains of cars loaded with stone ready for dispatching to the cement plant over the company's own railroad line.

At the plant the interest of the visitors was focused on the erection of a new 10½- by 330-ft. rotary kiln alongside one of similar size which was placed in service three years ago. The new facilities are expected to be in operation shortly after the first of the year, bringing capacity of the Victorville plant to a record 3,000,000 bbl. annually.

Afterwards the guests drove to picturesque Lazy River Ranch for an enjoyable dinner arranged for them by the Southwestern management.

The trip was in lieu of the group's regular monthly meeting and marked the first formal gathering under its newly-appointed secretary-manager, Neil Snow.

Plans are under way for resurfacing the oldest concrete highway—that is, a mile of it—in New Jersey. The stretch, on Route 24 in Warren County, was constructed 41 years ago. Low bid was $261,631, submitted by the Franklin Contracting Company of Newark.



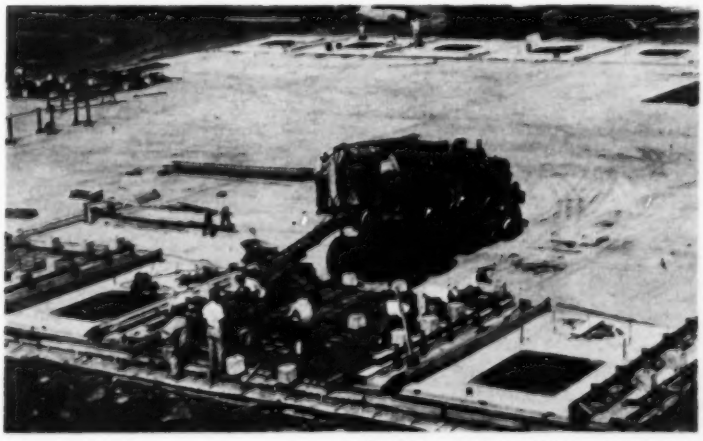
● At the Victorville plant of the Southwestern Portland Cement Company (left to right): William Grindle (Concrete Masonry Manufacturers' Assn. vice-president), San Joaquin Blocklite Company, Selma, Calif.; Ken Best (president, Northern California Concrete Products Assn.), Best Concrete Products Company, Oakland, Calif.; Ed Ripley (C.M.M.A. president), General Concrete Products Company, Van Nuys, Calif.; and Bob Blair, host for Southwestern.

Combine Tilt Up and R.M.C. To Speed Construction

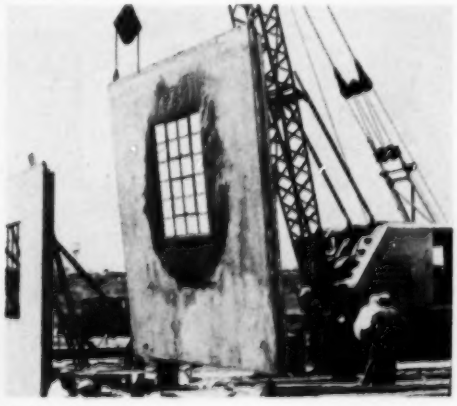
A project involving the extensive use of tilt-up construction and ready-mixed concrete is being undertaken at the new $5,000,000 plant of Entin Industrial Terminals, Inc., in Clifton, N. J. Two of the firm's buildings have already been completed. According to Sol Entin, president, the construction method being used is speedy, economical, and sound engineering practice. It has resulted in substantial savings in form labor, scaffolding, stripping, carpentry, bricklaying, plastering, and other important costs. Indicative of the speed of construction is the fact that in the first 40,000 sq. ft. building, the wall panels were erected in just three days.

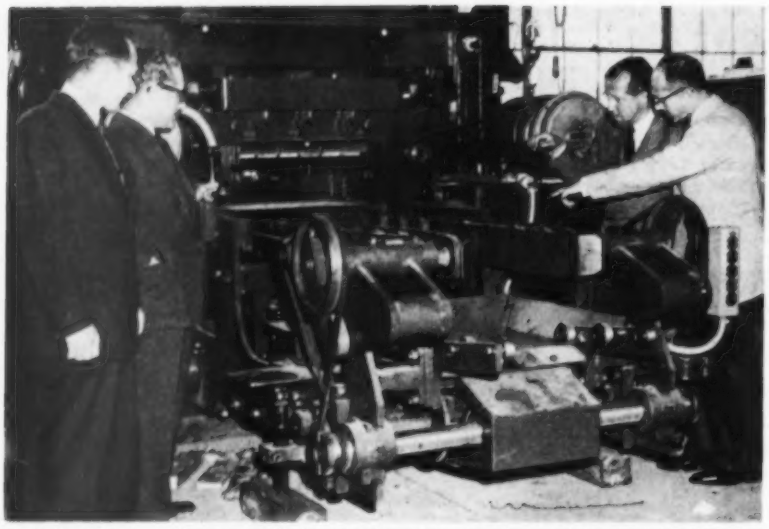
In the actual, on-the-job construction, the finished concrete floor serves as a form on which to cast the walls. The floor is covered with a paraffin film on which is poured a low-slump concrete. The underside of the panel constitutes the outside wall surface of the building. After the pouring the concrete is vibrated to twice normal density. Panels are always cast in one piece; columns are poured integrally with panels. A truck crane handles the erection of the wall panels.

● Views of the tilt-up method of construction being used at the Entin Terminal construction project in Clifton, N. J. Left: Ready-mixed concrete is used in pouring the precast wall panels. Note that the finished concrete floor serves as the bottom form for the wall panels.



Below: Walking the precast wall panel in place with a truck crane.





● Robert Hirst, a director of Taylor Woodrow, Ltd., London, and Dr. Rudolph Maculan, president of Ebensee Concrete Works in Vienna are pictured looking over a new model Besser Vibrapac concrete block machine with export salesman B. L. Neville and Fred Lisovsky of the Soffit Roofing and Floor Division, both of the Besser Manufacturing Company.

Mr. Hirst's company has operations in the United States, Canada, the African collonies, and Australia. The concern also has harbor projects in progress in Nigeria, Kenya, Tanganyika, and the Gold Coast, all in Africa. Dr. Maculan, besides heading the Ebensee Concrete Works, holds the degree of doctor in civil engineering and lectures at the University of Vienna.

Death of H. Schurmann, Pioneer Pipe Producer, Loss to Concrete Industry

Howard Schurmann, president of the Independent Concrete Pipe Corporation, Indianapolis, Ind., died on October 13 at a hospital in that city at the age of 77 years.

Educated at Rose Polythechnic Institute and Purdue University, Mr. Schurmann became a civil engineer and in 1907 was named chief engineer of the Reinforced Concrete Pipe Company of Jackson, Mich. This was one of the first firms in the field of concrete sewer and culvert pipe construction. In 1913 Mr. Schurmann organized the Independent Concrete Pipe Corp., becoming its first vice-president and sales manager, and later its president. Today the firm is operating plants in St. Louis, Indianapolis, and Mishawaka, Ind., and is one of the oldest businesses of this kind in the Middle West.

Mr. Schurmman was a member of the American Concrete Institute and the American Society for Testing Materials. In 1950 A.C.I. conferred upon him the citation "Distinguished Member" for exceptional contributions he had made to the technical, ethical, and production standards of the industry.

Clay-Lined Concrete Pipe Handles Waste at Southern Paper Mill

Use of clay-lined reinforced concrete pipe as a pressure-conduit to handle acid effluents from industrial plants is demonstrated by a new installation at the Coosa River Newsprint Company, Coosa Pines, Ala. According to John W. Leicht, engineer for the paper company, the old discharge line, made of concrete pipe with the inner surface coated with a bituminous compound, was in advanced stages of disintegration. The major requirement of the line was to carry corrosive effluents, which have a pH rating of from 2.5 to 3.0 resulting from the use of chlorine in the wood pulp bleaching operation.

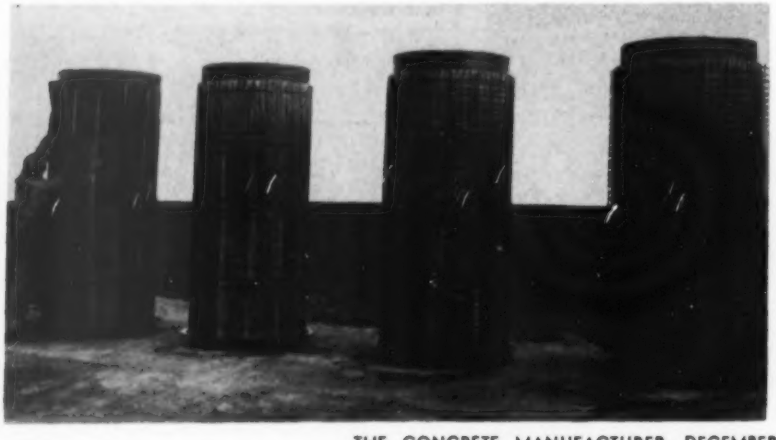
After studying various proposals, Mr. Leicht chose 8-ft. lengths of 42-in. reinforced concrete culvert pipe, lined with 1.25-in. clay plate. The pipe was manufactured at Universal Concrete Pipe Company's plant at Decatur, Ala. The finished pipe line is 888 ft. long, reaching from the discharge pumps to an outlet.

Production of the pipe involved several engineering problems. The clay plates were secured to the core-mold by steel straps. (See photographs.) Rubber strips were fastened between the plates to provide annular spaces 1.25 in. deep and from .25 to .50 in. wide. The outer mold was then placed, with the steel reinforcement cage in position. The concrete was cast and consolidated by vibration to provide strong and dense concrete.

After curing, the annular spaces of the pipe were filled with a molten acid-proof, furane resinous compound. Since all inner surface must be protected, the groove end was also coated, in this case, with a plastic acid-proof compound.

Installation of the pipe was handled by the Southern Amiesite Co. of Birmingham, Ala., and the Moss-Thornton Construction Company of Leeds, Ala. Unusual features of the construction included embedment in foundation concrete and the use of a supplemental concrete collar 16 in. wide and 6 in. thick at the pipe joints.

This photo, taken at Universal Concrete Pipe Company's Decatur, Ala., plant, shows the complete sequence of preparing cores for pouring prior to placement of the outside form. At the left, clay plates are placed on the core. The second core has the plates placed and fastened. The third shows the inside cage of steel reinforcement in place; the fourth has both lines of reinforcing placed.



Workman at Universal Decatur plant pours molten acid-proof furane resinous compound into the annular spaces of the Coosa project pipe.

Rx Ready Mix

By Harry F. Thomson

Early Controlled Discharge Dump-Body for Ready-Mix

IN 1930 the General Material Company, St. Louis, Mo., pioneer operators of ready-mixed concrete in that area, received a contract from the Illinois Terminal Railroad to furnish concrete for the construction of a new entry into St. Louis from the railroad's bridge over the Mississippi River to the downtown section, a distance of about 2½ miles. The project included an underground section beneath a city thoroughfare of about ½ mile and a reinforced concrete elevated section, with ramps, also about ½ mile. The intervening portion was at grade, and involved only paving concrete.

To service this project and other construction in the neighborhood, General Material erected a temporary central-mixing plant, adjacent to the existing railroad line, equipped with a 2-cu. yd. non-tilting mixer. But the number of agitator bodies (they were Barrymore type) which the company then operated were not sufficient to service the several portions of the railroad project which were under way simultaneously.

The company had had wide experience in delivering concrete, chiefly for paving and foundations, in steel dump-bodies with rounded bottoms (known as batchers) or with flat bottoms having chamfered corners, on hauls of 10 and 12 miles. Company officials were convinced that with good grading of gravel aggregate and sufficient fines in the sand (F. M. about 2.60) excessive segregation could be avoided and reasonable service given the customer with these latter bodies on hauls of 2 to 3 miles, provided that the discharge of concrete was controlled.

It was decided to convert a number of the available flat-bottom steel bodies to what were termed "V-gates". These bodies were built to haul 2½ cu. yd.; they had rounded corners (about a 6-in. radius) at the three sides of the bottom and at the front end; and they were about 10 in. narrower at the front than at the rear in order to free a load of stiff concrete by breaking the suction to the sides when the body was raised. The dumping angle was quite high, about 70 degrees.

The conversion consisted of welding diagonal gussets toward the rear the height of the sides. This created a V to lead the concrete to a 14-in. vertical slide in the rear gate, which was welded closed; the slide-gate was controlled by rack-and-pinion actuated by a hinged crank at the left side. A short chute was added under the gate opening. Thus, when the slide-gate was raised by cranking, the concrete flowed under the gate, causing a degree of remixing if there had been any water or mortar gain while en route.

The accompanying photos show this converted "V-gate" body delivering to various types of projects during the period from 1930 to 1932; approximately 200,000 cu. yd. of concrete were delivered in this equipment. The following year the company began installing revolving-drum bodies, withdrawing the "V-gates", except for certain jobs.

● Delivering 4-in. slump concrete into a depressed hopper; the crank for controlling the gate is at the left.

Two items might be noted in connection with this experience. First, this was long before the introduction of purposeful air-entrainment; but by giving careful attention to the grading of aggregates it was possible to furnish structural mixes without objectionable segregation on hauls of 2 to 3 miles.

Second, this "V-gate" body had many characteristics similar to the special dump-bodies on the market in recent years, such as rounded corners, high dumping angle, and adjustable gate for controlling discharge. One feature in which this body was not the equal of current bodies was the height of the discharge; our body was hinged on the sub-frame just above the chassis, whereas the recent commercial bodies are hinged on A-brackets about 20 in. above the chassis, permitting discharge at that much greater height.

It was recognized early that where the conditions of haul and delivery are favorable, handling central-mix concrete in dump bodies is more economical than in revolving drums, as the body weighs and costs less, the under-body hoist is a simpler mechanism than the drive for turning the drum, and there is some satisfaction in viewing the concrete prior to dumping. However, as was our conclusion years ago, the revolving drum has justified itself for handling the major portion of commercial work.

● An unusual delivery into a line of seven 30-ft. belt conveyors in series, handling concrete over a newly-placed subway deck too green to carry truck weight.

John Paul Jones has been made sanitation engineer for the Lefler Concrete Block Company, Charlotte, N. C. He will be in charge of the installation of all sewage systems for suburban and country homes, and will supervise those installed by Lefler in schools, churches, and industrial plants.

Safety in Ready-Mix Operations

A full-time safety director, employee participation, and good public relations aid ready-mix plants in winning safety honors.

James E. Bagwell, manager, Fischer ready-mix concrete department, and Charles E. Nichols, safety director, feeding "Careless". The care of the odorous ruminant is delegated to the department sustaining a lost-time accident. The words "Lost Time Accident" are reproduced in dripping blood-red letters.

SAFETY is a subject which cannot be overemphasized in the concrete industry. For this reason we thought that our readers would be interested in the manner in which two winners in the 1952 annual safety contest sponsored by the National Ready Mixed Concrete Association maintained accident-free records during the contest period. The two firms were the Fischer Lime and Cement Company, Memphis, Tenn., winner in the Class A competition (companies producing more than 100,000 cu. yd.) and the Morse Sand and Gravel Company, Inc., Attleboro, Mass., winner in the Class B competition (companies producing between 50,000 and 100,000 cu. yd.). Both companies were recipients of bronze safety award plaques given each year by PIT AND QUARRY in recognition of outstanding achievements in safety.

FISCHER LIME & CEMENT COMPANY

The safety record of the Fischer Lime & Cement Company, one of the leading building material concerns in the South, is extraordinary. In fact, it is almost unbelievable, in view of the fact that just 5½ years ago their insurance carrier cancelled the firm's accident policy because of the very high accident frequency rate. An indication of the seriousness of the accident problem is seen in the $114,000 paid in insurance premiums by the Memphis concern during the three-year period prior to the cancellation.

The situation was especially critical due to the magnitude and variety of Fischer's operations. The company operates three plants in Memphis—ready-mixed concrete, concrete products, and steel fabricating—and two plants in Mississippi—sand-and-gravel and clay brick. In addition, the firm maintains a huge building materials warehouse in Memphis, in which over 10,000 building products are handled, including cement, lime, plaster, wallboard, lumber, hardware, and other supplies. More than 500 employees are on the company's payroll. The firm's fleet of trucks numbers 108, about 90 of which operate on the crowded streets of Memphis. Approximately 40 of these trucks are transit-mixers.

After the cancellation of the firm's insurance policy in 1947 Fischer negotiated with several insurance companies; and one concern agreed on a trial run period which was based on a retrospective policy with a debit premium and on the condition that a safety program be negotiated. According to W. S. Walters, Fischer's executive vice-president, "We thought the only thing necessary to do at first was to give one of our men the title of 'Safety Engineer', and our troubles would be over. With this in mind we converted a garage mechanic into a safety engineer. Some improvement was shown, but it took two years to find out that safety was *serious* business."

W. S. Walters, executive vice-president, and Charles E. Nichols, Fischer Lime & Cement Company, display the Pit and Quarry bronze safety plaque won by the company in the 1952 N.R.M.C.A. safety contest. Both men played vital roles in Fischer's safety record.

Accordingly the realization came that some one from top management must be in charge of plant safety. First Mr. Walters assumed the authority, and a carefully planned program was effected. Then early in 1952 a full-time safety director, Charles E. Nichols, was employed, with safety and only safety his business. Mr. Nichols came into the organization with a good background in accident prevention, which was supplemented by fundamental and advanced training courses taken with the National Safety Council. In setting up a sound safety program, Mr. Nichols first established a set of safety rules, most of which are common sense rules for doing a job right. At the base of his co-ordinated safety program are the three "E's" of the National Safety Council, namely *Engineering*, *Education*, and *Enforcement*, which are adhered to wherever and whenever possible.

Engineering Regarding the first "E", all plant equipment, machinery, and trucks are checked with reference to hazards, and warning signs are placed in necessary places. All truck drivers are required to report immediately to the maintenance department when any defect in equipment is noted. In fact, a recently-established ruling requires drivers to report the defect in writing to the foreman, who in turn notifies the mechanic. In this way the defect is sure to be corrected. Then, too, by means of this system, blame for an accident based on a defective part can be properly placed. Careful truck routing is also carried out, so that school zones and dangerous intersections are avoided, even though such routing may add extra miles to the trip.

Education Various training and educational devices are used in the safety program. First, all new employees are required to take complete physical examinations. Be-

fore they are hired, prospective drivers go through a short driver-training course, after which they are required to pass a driving test given by the safety director.

Fifteen-minute safety meetings are held each week at all operations, where previous accidents are discussed and safety instructions are given by the safety director and the foremen. Slides and movies on safety are often shown at these meetings. In addition, every employee has the opportunity to report on unsafe equipment or practices noted.

Once a month safety meetings are held for the plant superintendents, supervisors, and foremen. This meeting is held in the evening, the programs being prepared by monthly chairmen taken from the supervisory group. Every third safety session is a dinner meeting held at a local hotel.

Safety slogans are put on all trucks and are changed frequently. Such slogans as "Watch That Child", "Safety Is No Accident", and "The Life You Save May Be Your Own" are most commonly used. In addition, signboards are used at all operations showing the number of days operated without a lost-time accident. Driver pride is also created and fostered. Trucks are kept well ordered and clean.

Enforcement Safety awards, commendations, and penalties are given to keep the employee's interest in safety active. Penalties are based on the seriousness of the accident, the law-breaking incident, or the safety infraction. Fines for violation of local speed laws are paid by the driver. For minor infractions not necessitating fines, the employee is questioned by the safety director and thus given a chance to save face. If an unsatisfactory explanation for the unsafe act is given, Mr. Nichols tries to sell the employee on the proper method. In no case is safety forced on the employee, nor is he censured before others.

For more serious infractions of safety rules, particularly through misconduct or gross carelessness on the part of the employee, he is subject to a layoff of one to three days or even to dismissal if the act is extremely serious. For second offenses the layoff is longer, generally three to ten days; third offenses generally result in dismissal.

In the interest of preventing property damage and releasing the company from possible claims, the company has prepared waiver forms which owners must sign before the trucks are driven onto their property. This has reduced property damages to the minimum.

A complete investigation of every accident is made, and the responsibility and cause of all accidents are determined.

Another means of keeping interest in safety alive is through the use of "Careless", a large odorous goat. Any operation having a lost-time accident is required to care for the welfare and happiness of the goat for one week. The success of Fischer's safety program is indicated by the fact that it was necessary to use the goat only a few times last year.

As a special means of promoting safety among drivers, Mr. Nichols frequently makes spot checks of drivers, paying special attention to violation of speed laws.

Much of the success of the Fischer's safety program is based upon the proper attitude of top management towards the employee. The safety director puts forth maximum effort to gain the employee's confidence and co-operation, which he claims are of prime importance in achieving safety. Employees are treated fairly and without bias. Safety is never forced on them; instead, the workers are made to feel the desirability of safety. The co-operation of all employees is fostered, since a wrong attitude on the part of one employee can go a long way in wrecking a safety program.

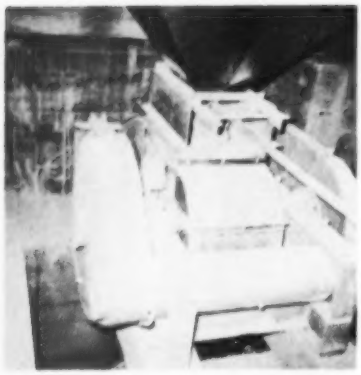
The safety director keeps in close personal contact with the employees; informality prevails at all times. By maintaining this close relationship, Mr. Nichols has occasionally been able to detect neurotic tendencies among workers, to root out the cause, and to help the worker resume his normal attitude. According to Mr. Nichols, "It is the normal attitude which prevents most accidents." Employees are also occasionally aided in personal matters.

Alfred H. Morse, president, Morse Sand and Gravel Company, holding the plaque won during the 1952 N.R.M.C.A. safety contest.

In all dealings with employees, Mr. Nichols substitutes the method of tactful persuasion for authority. In fact, it is this philosophy which largely explains the success of the safety program.

The success of Fischer's concerted safety program can be measured by its outstanding achievements this last year. Beginning in March, 1952, the company (all divisions) operated 335 days or 1,550,000 man-hours without a lost-time accident. The accident frequency rate dropped from 15.5 in 1951 to 1.0 in 1952, and the severity rate from 3.53 to .01. Concerning the insurance policy, which is the retrospective type, whereby as much as 60 percent of the standard premium can be recovered, 32 percent was returned in 1950, 40 percent in 1951, and 51 percent in

A part of the ready-mix driver personnel, who helped make 1952 an accident-free year for the Morse Sand and Gravel Company.



1952. During the last N.R.M.C.A. safety contest period, which ran from July 1, 1951, to June 30, 1952, the ready-mix plant operated without a lost-time accident and with only two minor property damages.

As a result of the highly successful safety record, Fischer actually won two national safety awards in 1952—the N.R.M.C.A. award already mentioned and also an award to the entire company by the National Safety Council for their amazingly low accident frequency and severity rates.

Mr. Walters sums up the value of Fischer's safety effort by stating that their safety program pays dividends not only in terms of reduced operating costs, but also in terms of better employee and public relationship, which cannot be measured in dollars and cents.

MORSE SAND & GRAVEL COMPANY

In the Class B competition, seven companies maintained accident-free records during the 1952 contest period. The Morse Sand and Gravel Company, Inc., Attleboro, Mass., was awarded the Class B trophy in view of having the greatest combined total production of ready-mixed concrete and man-hours worked among the seven companies.

Incorporated in 1926, Morse became associated with ready-mixed concrete in 1929. A ready-mix plant was added to the firm's sand-and-gravel production facilities in 1936, and since that time more than 1,000,000 cu. yd. of concrete have been produced. A fleet of 18 ready-mix units (4½- to 7-cu. yd. Rex mixers mounted on Autocar trucks) handles concrete deliveries. The company also sells about 200,000 tons of aggregate of all sizes yearly, in addition to supplying the ready-mix concrete plant.

Morse achieved outstanding success in safety in an amazingly short period of time. The company's success story is told in the words of

Guards are placed on all open drives at the Morse operation.

Alfred H. Morse, company president:

In 1951 our company instigated and outlined a safety program to conform with the N.R.M.C.A.'s request for active participation in the annual safety contest. Incidentally, this program got under way without my knowledge, and the credit for this must rest with my office management.

One of the first steps was to call in the insurance representative and inform him of our plans to set up this policy. He was well pleased with the venture and supplied us with safety posters and literature, which in appearance were attractive and interesting enough to stress the importance of their contents with the employee. Valuable information was secured by reviewing accident reports, most of which were minor, that had been submitted during previous years. This information was then printed in simple outline on mimeographed sheets and distributed to our employees under the caption "Safety Tips".

The local police authority was very helpful in obtaining traffic signs and having them placed one-half mile from our plant to origin of dispatch. They requested our drivers to be conscious of the prevailing speed zones and traffic regulations at all times and emphasized the reasons why these regulations are imposed.

Upon completion of the foundation of our program, the employees were assembled at a meeting and briefed as to our intentions and plan. The plan, simply stated, was to attain our objective—no injuries to either employees or non-employees, and no property damage. To accomplish this we stressed the importance of upkeep and testing of our equipment. Then at the meetings following we reviewed what had been accomplished and compared results with the facts established, the advantages and recommendations.

The safety program was perfected as it progressed, through suggestions contributed by the employees. This led to the employees' becoming more interested and observant in details that they might have ordinarily overlooked. Their suggestions were received with friendly assurance and interest by the management. The results of the 1951 N.R.M.C.A. safety contest disclosed a decided improvement in comparison with the previous years. The results were posted on

our bulletin board and the percentages of decrease noted.

With the results of the 1952 contest I am convinced that the past two years during which the company has participated in the contest have stimulated more interest and better care of the equipment, and improved employee relationships. We experienced a 12 percent reduction in the cost of maintaining equipment during this period and as our output and mileage were comparable with the previous two years, we felt that the efforts put into the safety drive had a great deal to do with this saving. It was only through the fine results of the last two years that our insurance rates were reduced, as follows: personal property, 8 percent; collision, 8 percent; personal liability, 8 percent; fire insurance, 20 percent; and compensation, 24 percent.

The working area of both the concrete and gravel plants is maintained free of the usual accumulation of junk parts and debris. Guards are placed around all open drives, and all walkways are kept free of any accumulation. In my opinion, plant cleanliness along with a "think first" attitude has been instrumental in our safety record; and hardly a visitor passes without commenting on this effect.

Another improvement is the effect this program has had on the public. (40 percent of our business concerns private housing.) We have instructed our drivers to seek information concerning the location of cesspools, dry wells, water meters, soft trenches, driveway conditions, etc., before attempting to place the concrete or gravel. This eliminates some of the prime causes of property damage and also accounts for the surprising amount of correspondence we receive praising the drivers for their courteous manner and interest. We are located in an area which is highly competitive, and the fact that we employ no sales force to cover this area is attributed somewhat to this driver policy.

Bulk Cement Handling: Key to Higher Profits

another P and Q exclusive

"YES, I'd like to expand our operation, but I don't want to tie up any more capital in plant equipment."

This statement could be attributed to many of today's concrete manufacturers who are confronted with high operating costs and a relatively low profit margin. One such producer, however, recently found a solution to this perturbing problem. He is Lon C. Ware Jr., president of Mexico Building Products Company, Inc., Mexico, Mo., whose company produces both ready-mixed concrete and concrete block. The solution involved the change-over from bag to bulk cement handling. A modern bulk cement plant was installed about a year ago, and the savings accruing since that time have already more than half paid for the initial investment in equipment.

The savings have been brought about by two principal factors, according to Mr. Ware. First, there is a considerable difference in the purchase price between bulk and bag cement (about 31 cents per bbl.). Second, it takes approximately 10 percent less labor to handle bulk than bag cement.

Before the decision was made to invest in the new bulk cement facilities, Mr. Ware had first considered replacing the plant's wooden aggregate bins with steel bins. These wooden structures, which were original plant equipment (installed in 1947), had deteriorated considerably during the five-year span. This would have been the first order of business, had not the company been led to realize that investing in a bulk cement plant would be a wiser move, since the new plant would not only pay for itself in a comparatively short time, but would ultimately provide sufficient profits to cover the expense of new steel bins. That this move was justified is indicated by the fact that within a year the new plant will probably be paid for. After this the plan will call for the purchase of the new steel bins. It is expected that these bins will be paid for in the following year.

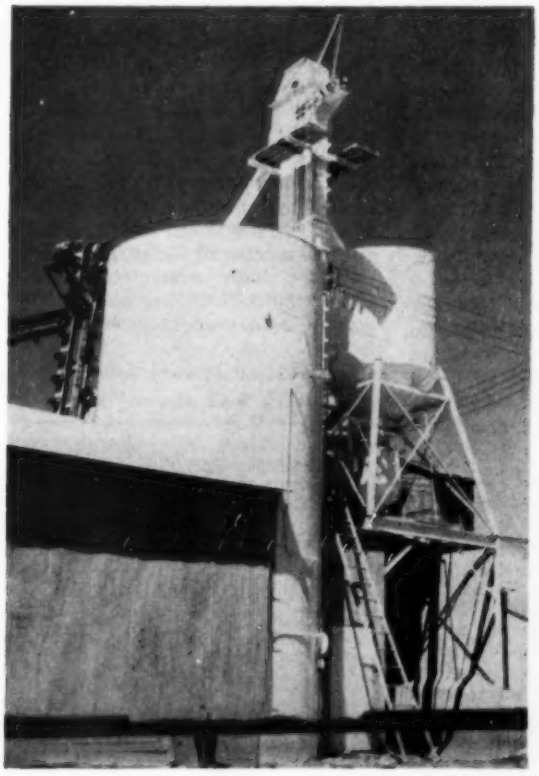
The new bulk cement handling equipment, which was designed and built by Material Handling, Inc., St. Louis, Mo., is known as a recirculating system. Cement is discharged by truck into a hopper (located in metal shed) and then conveyed *via* screw conveyor and bucket elevator to either the cement storage silo or to the working hopper located above the cement weigh batcher. The same conveying units can also be used to transfer cement directly from the silo to the working hopper. Electrically-operated Bindicator switches are installed in the working hopper to indicate minimum and maximum cement levels.

Mexico Building Products Company was incorporated in the spring of 1947. Original equipment included one block machine and one used transit mixer. In the few years that followed block production was increased from 100,000 to 200,000 annually, but the real stride in that time was made in the ready-mixed concrete business, which today represents 80 percent of the company's total gross sales. The block business is not considered a sideline, however; actually, it represents a real source of profit, since from an accounting standpoint, less overhead is required per unit sale,

The ready-mix plant is the dry-batch type. Deliveries are made by several Hi-Lo (Concrete Transport Company) mixers.

Blocks are produced on a Fleming FMC-180 automatic plain-pallet single-block machine. Following steam curing, the masonry units are placed in yard storage for a two-week period. A stockpile of 30,000 blocks is regularly maintained.

Besides serving as a producer, Mexico Building Products also conducts a profitable retail building supply business. A complete line of tools and materials necessary for home construction and repair work, carpentry, and plumbing is handled. This phase of the business has been successful because the operation does not require any additional space and has very little overhead. Since one of the company employees is always in the main office, an extra man is not needed to handle the sales.



● Left: View of the new bulk cement handling facilities at the Mexico Building Products Co., Mexico, Mo. Cement, delivered by truck, is discharged into the hopper located in a shed at the left and then carried via screw conveyor and bucket elevator to the storage silo or the working hopper located above the cement weigh batcher.

● Below: One of the transit mixers used at the Mexico plant.

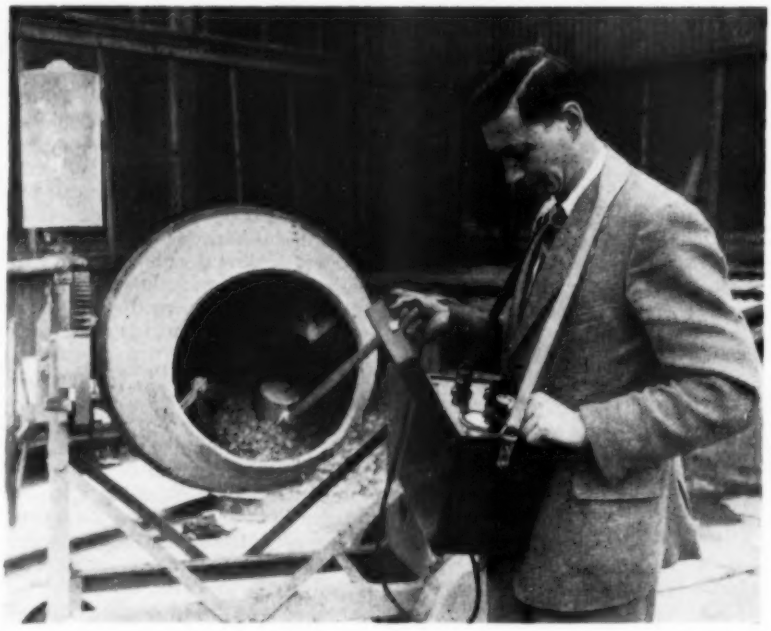
Electronic Tester For Concrete Mix Eliminates Common Inaccuracies

another P&Q exclusive

MODERN building and public works construction demand precise concrete design specification to obtain the strength requirements with the minimum of material.

With metals and other building materials, such as laminated woods, the requirements are easily insured. Concretes, however, may vary from mix to mix, due, largely, to the water content of the aggregates, which often varies in the different parts of the same load of gravel or sand.

By IVOR B. N. EVANS
Association of British Science Writers



Testing a concrete mix at a building site with the aid of an electronic concrete mix tester.

Since the strength of a concrete mix is fundamentally dependent on the water-cement ratio, it is obvious that the strength of concrete made on a site will vary from mix to mix by the batch method and along the line by the so-called continuous methods.

Exact control has only been possible previously by laboratory analysis, which involves a time-lag much too great for production purposes, or by the use of the slump test, which is only a comparatively rough assessment of concrete quality.

The electronic water-cement ratiometer, however, eliminates the inaccuracy and measures the ratio swiftly and accurately within a minute after its application to a mix.

The ratiometer is the result of five years of research, followed by many months of industrial testing by the Civil Engineering Research Laboratories at Sunbury-on-Thames, Middlesex, England.

Compact, sturdy and portable, both parts together weighing only 24 lb., the "S.G." ratiometer can be mastered by a semi-skilled workman in an hour.

The device consists of two parts, a canister, or "prodder" at the end of a tubular handle, and an instrument case housing the control panel, electrical circuits, and batteries, to which the handle is connected by a length of cable.

On the base of the prodder are two electrodes a short distance apart. Inside the canister is a high-frequency vibrating unit operated by the vibrator in the instrument case. The canister's vibrations, when it is partially immersed in a concrete mix, causes a slurry of water, cement, and any fine aggregate dust to precipitate around the electrodes.

The amount of electrical current passing through the slurry between the electrodes, when the prodder is quietly raised until only its base is touching the concrete, is measured on a milliammeter on the control panel. This meter is calibrated in two large regions labeled "Too Wet" and "Too Dry," each adjacent to a small center region labeled "O.K.".

In actual use, a batch of concrete of precisely the required water-cement ratio of the designer is made from materials to be used on the site. The switching-on knob on the panel is turned to "calibrate." The knob labeled "adjust" is moved until the dial's pointer registers zero. This insures the elimination of discrepancies due to the condition of the battery.

When the dial's pointer ceases to move with the prodder partially immersed and brought to the surface as already described, the third knob with a numbered scale is adjusted until the dial's pointer rests in the center of the "O.K." segment.

(*Continued on page* 167.)

Water Cement Ratios	Mix Proportions (Cement : Sand: Gravel)				
	1:1:2	1:1½:3	1:2:4	1:2½:5	1:3:6
0.35	76				
0.40	56	100			
0.45	42	82			
0.50	35	61			
0.55	30	45	74		
0.60	31	42	58	95	
0.65	—	40	44	67	
0.70	—	36	40	51	76
0.75	—	—	—	33	62
0.80	—	—	—	33	54
0.85	—	—	—	33	35
0.90	—	—	—	—	30
0.95	—	—	—	—	25
1.00	—	—	—	—	21

N.R.M.C.A. Directors Meet For Annual Mid Year Session

another ON THE SPOT report

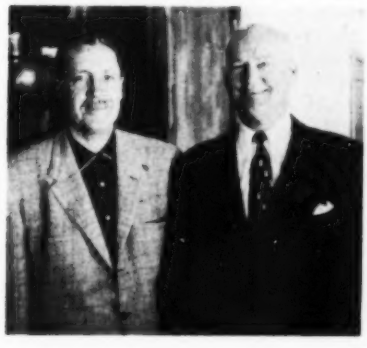
THE mid-year meeting of the board of directors of the National Ready Mixed Concrete Association was held September 28 to 30, 1953, at The Broadmoor, Colorado Springs, Colo. The board of the National

By WALTER E. TRAUFFER

Sand and Gravel Association met at the same time. The first day was devoted to a joint meeting, the second to individual meetings, and the third to whatever activities each individual preferred. This arrangement met with universal approval. The meetings were well attended, with 56 directors present from both groups. Most of them brought their wives and some also other members of their families. Much important business was transacted which will affect the future of the entire ready-mixed-concrete industry.

Ample time was provided, and arrangements were made so that everyone could avail himself of the unrivalled facilities for entertainment of various kinds provided by this outstanding resort and the surrounding Rocky Mountain area. This included various tours, as well as visits to plants. On two nights cocktail parties were held, and on the second night there was a steak fry on Cheyenne Mountain.

The meeting was opened with a brief address by President Herbert Jahncke (Jahncke Service, Inc., New Orleans) in which he commented on some of the recent developments affecting the industry and some of the problems confronting it. Among these were price control, labor, safety, group insurance, and the efforts to free the industry from renegotiation. He also said that the association is in excellent financial condition and continues to grow rapidly. Since the last convention in San Francisco 48 new members and 5 new associate members have been added for totals of 650 and 75, respectively, the highest in the history of the association.



William J. Hicklin Jr. (Capitol Concrete Company, Jacksonville, Fla.) and Charles H. Latham (Lynn Sand and Stone Company, Swampscott, Mass.).

Details of the retirement plan for the staff of the associations were given by Howard W. Jordan (Metropolitan Sand & Gravel Co., Port Washington, N. Y.). This plan, which has been adopted by both associations, also has optional insurance features.

By unanimous vote Stephen Stepanian (Arrow Sand & Gravel Co., Columbus, Ohio) was elected an honorary member of the board in acknowledgment of his long and outstanding service to the association and the ready-mixed-concrete industry. It was also unanimously voted to add six more members to the board of directors, for a total of 24, because of the rapid growth in membership, and because of the need to better represent the industry by sizes of companies, geographically, and by types of operations. It was also voted to increase the executive committee from 4 up to 6 members in addition to the four officers.

Convention Plans At the joint meeting of both boards considerable time was devoted to discussion of plans for the coming joint conventions and machinery exhibition to be held at the Conrad Hilton Hotel, Chicago, February 15-19, 1954. Vincent P. Ahearn, executive secretary, briefly described the program, which is now almost completed and which will apparently maintain the high standards set in previous years. All of the subjects most important to producers will be covered, and ample time will be devoted to the discussion of operating problems. Monday, February 15, will be devoted to meetings of the board of directors. The next three days will be given over to convention meetings, probably including three simultaneous sessions. The convention will close Friday noon.

Mr. Ahearn stated that the machinery exhibition will be open during the meetings, and everything possible will be done to induce producers to visit the exhibits. In spite of the enlarged exhibit facilities available this year the space may be oversold, and some of the larger exhibitors may be asked to limit their allotted space. There will be no manufacturers' reception, but there will be hospitality hours in a special room each evening, a practice inaugurated at the San Francisco convention which worked out very well.

The 1954 mid-year meetings of the two boards of directors are to be held at the Manoir Richelieu, one of Canada's great hotel resorts, at Murray Bay, Quebec, during the third week in August. Several other possible locations were also discussed, but this was the unanimous choice.

The 1955 annual convention will be held January 9-13 at Miami, Fla., where ample facilities are now available to handle such a large group. The boards also voted to return to the Conrad Hilton in Chicago for the 1956 annual convention.

Left: Robert Mitchell (Consolidated Rock Products Company, Los Angeles) and Emory M. Heuston (Bucyrus-Erie Company, South Milwaukee, Wis.).

Right: Mr. and Mrs. John W. Roberts (Southern Materials Company, Inc., Richmond, Va.).

There was considerable discussion about possible locations for the 1957 annual convention. Robert Mitchell, representing the Los Angeles members and California associations, invited the associations to go to Los Angeles, and it was voted to do so. Mr. Mitchell promised ample hotel facilities.

There seems to be a growing feeling in favor of an outside show, and the Coliseum in Chicago and the Public Auditorium in Cleveland were mentioned as possible future locations. Many manufacturers would like to exhibit larger machinery, which the present limited space does not permit.

Federal Legislation In discussing federal legislation affecting the two industries, Mr. Ahearn expressed the belief that the excess profits tax will end with this year, but he expects no change in the corporate tax rate. Some form of general revenue taxation is possible. Percentage depletion, he said, will again be under attack, and there is serious opposition to Federal Aid for highways. A committee was appointed to study the Federal Aid situation and recommend a policy for the association. A heartening sign, said Mr. Ahearn, was the failure of the attack on the Taft-Hartley Law and the conservative attitude of Congress toward any changes in it. With respect to the recent F.T.C. delivered price decision, he believes that any manufacturer may now safely meet his competitors' delivered prices. It is doubtful, however, if Congress will pass a law on this.

With regard to industry questions before executive departments of government, Mr. Ahearn said that clarification of jurisdiction of the Wage and Hour Law is near. There is also a possibility that the extension of the use of industrial radio to the sand-and-gravel and ready-mixed-concrete industries is not far off. For information on application of the 3 percent tax on transportation, he referred to a detailed report sent to members recently. Producers are advised to stamp their checks to owner-drivers with the statement that the sum includes the 3 percent tax. This procedure relieves the producer of any responsibility.

There was some discussion of new pricing practices of the cement industry, and some speculation as to its effect on their dealer policies. Little seemed to be known as yet on these subjects; but in some areas cement companies are not absorbing freight, while in others they are absorbing it up to 25 to 30 cents per bbl.

Ezra C. Knowlton (Utah Sand and Gravel Products Corporation, Salt Lake City) and Nathan C. Rockwood (Rock Products, Chicago).

Strikes in 1953 The strike problem in 1953 had an important place on the program, and several producers told of their experiences. Several important areas had more prolonged strikes than any previously experienced in these industries. Herbert Jahncke (Jahncke Service Inc., New Orleans) described the first prolonged strike in these industries in that city, which lasted from July 1 to August 17. The teamsters union made exorbitant demands, asking for a large increase in wages, vacations with pay up to 4 weeks after 10 years' service, etc. All the ready-mix plants stood together. The Federal Mediation Service was first called in, with no result. The companies finally got an injunction to prevent picketing and invited their workers back, sending each man a special delivery letter. This ended the strike, and the union settled for a 10-cents-per-hour increase. Mr. Jahncke feels that in this instance the producers took the proper and most effective steps.

Howard W. Jordan (Metropolitan Sand & Gravel Co., Port Washington, N. Y.) told of the 6-week strike in the metropolitan area of New York which put 125,000 building tradesmen out of work. The strikers were offered a 30-cents-per-hour increase, which was refused. Finally some of the smaller producers in the area signed for an increase of 50 cents per hour and increases of from 3 to 5 percent in fringe benefits. The entire issue is now in process of arbitration. This strike, which ended September 19, is estimated to have cost each worker about $1,000.

Some of the golfers (left to right): Fred Bellamy (Concrete Materials Company, Waterloo, Iowa), Walter E. Trauffer (Pit and Quarry, Chicago), and Otis H. Manchester Jr. (Concrete Transport Mixer Company, St. Louis, Mo.).

Mr. Ahearn told of the teamsters' strike in Kansas City, which lasted from May 11 to July 21. An increase of 25 cents per hour and other benefits were demanded. The final settlement was for a 12½-cent increase and no other benefits. A similar strike in St. Louis lasted from May 19 to August 12 and affected 35 producing companies. This resulted in an increase of 22 cents per hour—15 cents retroactive to May 1 and 7 cents due next May 1—more paid vacations, and increases in other benefits. According to Mr. Ahearn, there are more strikes ahead of these industries, and producers can only win if they stick together. The reciprocal lockout can and must be used where it is helpful, but it is not applicable in all cases. He pointed out that in the above strikes only a part of the producers in the affected areas were association members, but the non-members followed the lead of the members.

Engineering Report Before the joint meeting of the two boards Stanton Walker, engineering director of N.R.M.C.A. and N.S.G.A., reported on matters of interest to both associations. At the laboratory of the associations at the University of Maryland the sand-and-gravel fellow has been doing research on bituminous mixtures, but he will soon enter the armed forces and cannot be replaced. The staff program will be expanded to carry on this work. The ready-mixed concrete fellow is working on the relationship between the thermal properties and the durability of concrete and its ingredients.

Mr. Walker said that inevitably a growing percentage of the research work being done is for individual member companies but that most of this is also of interest to other members. Advance registrations for the Short Course already exceed capacity. He also said that many of the association publications for either industry are really of interest to both and will in the future be regarded as joint releases.

At the separate meeting of the

ready-mix board Mr. Walker distributed a complete report on the truck mixer tests which, he said, gives all the details but contains few changes from the earlier progress report which was sent to each member. He pointed out some of the more important conclusions reached, particularly the fact that these tests proved that a greater percentage of truck mixer body volume can be used than is now the practice. This amounts to about ½ cu. yd. in the average mixer and should lower costs considerably for most producers. Any truck mixer sold in compliance with the old standards, said Mr. Walker, is eligible for the new plate and rating.

In the original tests 11 truck mixers of different sizes and types were used in order to provide a basis of comparison. These tests, according to Mr. Walker, showed such similar results with most of the various types and sizes that it is now planned to use only a few mixers in the more exhaustive tests to be made in 1954. At the coming annual convention in Chicago more information will be presented on this subject, on fly ash and admixtures in general, and on the new association and Truck Mixer Manufacturers' Bureau standards. A discussion of sampling and test methods is very important, Mr. Walker stated, as these cause more trouble than the concrete itself.

Mr. Walker believes that one of the best things a producer can do to improve his relations with customers is to use a good revolution counter on each truck mixer. In fact, he believes that such a counter should be installed on every mixer sold. He showed samples of several suggested types and makes, operating either mechanically or electrically, and told of another one being developed which will also show waiting time on the job. In closing, Mr. Walker said that the association should get out fewer but better and longer publications. He also suggested that an all-inclusive book be published on standards, test methods, etc.

Group Insurance Mr. Ahearn reported at the joint meeting on the status of the group insurance plan of the two associations and its present financial condition. He said that 669 employees and 350 dependents are now covered by the plan, and the number is growing steadily. He pointed out that many of those covered are white collar workers and that the plan can be adjusted to fit almost any conditions. He urged all members to study the plan carefully as it has advantages not offered by other plans in force or now available.

Left to right: Floyd G. Rubey (Dubuque Ready Mix Concrete, Dubuque, Iowa), George R. Bathe (Ready Mixed Concrete Company, Omaha, Nebr.), and Fred P. Curtis (Lyman Richey Sand and Gravel Corporation, Omaha)

Business Outlook Various board members in both industries reported on the business outlook for the balance of 1953 and for 1954 in their respective areas or states. Following are brief summaries of their reports, beginning on the East Coast and proceeding westward. As Stanton Walker put it, these reports average better than fair but somewhat less than good.

Massachusetts — Due to the New York State Freeway construction business in its vicinity is expected to be good into 1955. In other areas business is now about the same as 1952, and 1954 is expected to be off 10 to 15 percent.

Maryland — Home construction is down, but commercial and public building is up. As a result business in 1953 is about the same as in 1952, and no change is expected at least in the first half of 1954.

Virginia — Good business is expected to hold up if the government will release some of its backlog of planned construction.

Florida—Business in the southern part of the state is ahead of 1952, and 1954 is expected to be at least as good.

Pennsylvania — The three-year boom in the eastern part of the state due to large projects is nearly over. Actually 1953 business is ahead of 1952, when there were strikes and cement shortages. Early 1954 is expected to be up, with a falling off later. In the western part of the state both 1952 and 1953 were down from the peak year of 1951, and prospects for 1954 are not good.

Illinois—In the Chicago area 1953 was a good year, and 1954 should be the same.

Indiana—Business in 1953 is about the same as in 1950, with both under the peaks of 1951 and 1952.

Missouri—In the St. Louis area, in spite of a prolonged strike, business is about the same as 1952, and 1954 is expected to be good due to a large highway program.

Louisiana—1953 business is about the same as 1952, but 1954 is expected to be down.

Texas—Business in 1953 is over 1952, and no drop is expected in 1954 as much highway work is planned.

Nebraska — Business in Omaha is holding up, but other parts of the state are off.

Colorado—The ready-mix business has fallen off sharply since early in the year, and cement consumption is also down.

New Mexico — Business is down and will drop further in 1954 due to a decrease in home building.

California—In the northern part of the state home building is slowing down, but highways and schools are up, so little change is expected. In the southern area 1953 was a banner year, about 15 percent over 1952, and no change is expected in 1954. A big highway program has offset a drop in home building.

Washington — Home building is off, but military and public works construction are up. As a result the years 1952, 1953, and 1954 are on the same level.

N.D. Haulers Now Permitted To Fix Rates on Pipe, Block

According to word from Bismarck, N. D., the North Dakota Public Service Commission has added concrete pipe and concrete masonry units to the materials on which holders of special trucking certificates can fix their own hauling rates.

The two products were added to exceptions to the new schedules the commission had directed special motor carriers to post by December 1. Special carriers are those which do not operate between fixed points and which do not have a fixed schedule.

Exploding gasoline fumes caused a $10,000 fire recently at the Ready Mixed Concrete Company in Jersey City, N. J., which threatened the life of Donald Hinton, an employee. The latter was burned when his clothing became ignited. In addition to extensive damage to one mixer truck and slight damage to a second, the interior of the garage was gutted by the fire.

Carthage, Mo., reports a new industry, the United States Art Marble Company. Products are precast terrazzo non-slip stair treads. The firm is headed by H. W. Croley.

Spickelmier Company Develops Floor and Roof Slab System

● As the slabs come from the assembly line, they are placed on pallets for curing. Loaded pallets are placed on trucks for delivery to the job site by means of special gantry cranes. Up to 1,000 square feet of slab area can be delivered in a single truck load.

THE Spickelmier Company, Indianapolis, Ind., recently held open house to give builders and architects an opportunity to inspect the production of Rapidex floor and roof slabs. The visitors were taken through the big new plant, which was built to meet the increasing demand for Rapidex sectional slabs.

The plant is completely equipped with modern facilities for mass-production. Of particular interest to the guests were the demonstrations of the Rapidex system of fabricating and assembling the special blocks which make up the slab sections.

Individual blocks, the component parts of each unit slab section, are made of coarse and fine Haydite aggregate and portland cement. The Haydite concrete in these units has a compression strength of 3,000 p.s.i. after 28 days. By means of the unique block design, a tongue-and-groove joint is formed between the unit slabs; and when the joints are properly grouted, the entire deck area becomes an integral slab.

The use of Haydite also gives lightness in proportion to high strength. (8-in. Rapidex weighs 42 lb. per square foot; 6-in. weighs 30 lb. per square foot.) Other characteristics include an attractive finished appearance, light wave dispersion, resistance to deterioration, excellent acoustical properties, high fire resistance. These slabs provide an excellent bond for cement toppings. The core holes offer additional economy, as they are used for heat ducts, cold air returns, and for concealing piping and conduit.

Rapidex blocks are precision-ground on the compression faces to micrometric tolerances. After grinding, the units are assembled with core holes aligned. Steel reinforcing rods are centered in the two bottom core holes, and high-strength concrete grout is pumped under pressure through the core holes—surrounding and completely embedding the steel.

With the special method of manufacturing and assembly of Rapidex slab sections, allowances can be made for dead load deflection by actually "pre-arching" the slabs. This "pre-arching" or camber thus offsets deflection due to dead load, with resultant longer spanning ability. For example, 8-in. Rapidex with two 1-in. diameter steel re-inforcing rods will carry a live load of 59 lb. per square foot on a 29-ft. span. Need for intermediate structural framing is eliminated in many instances. Labor on the job is greatly reduced by the elimination of shoring, forming, and placing of reinforcing steel in solid slab construction.

(*Continued on page* 167.)

● Slabs are unloaded from the truck and set in position in one operation under the supervision of plant-trained personnel. All intermediate handling is eliminated on the job.

● Rapidex is not subject to weather limitations. It may be set in any weather, in which the crew works. The underside constitutes an acoustical ceiling, ready for painting. The topside, after grouting, is ready for roofing.

Some Observations on Expanded Blast Furnace Slag Concrete

By HENRY E. DeWEERDT
Consulting Engineer

another P-Q exclusive

DURING the last ten years precast concrete manufacturers have adopted more of an engineering approach in the use of lightweight slag. Concretes are now produced with 28-day crushing strengths attaining 5,000 p.s.i. and over. Floor and roof slabs are made for spans of 30 ft.; large wall panels and other construction and masonry units receive increased attention as thermal- and sound-insulation considerations gain in importance.

Through research a scientific understanding and technical control of slag concretes have been acquired. Distinct compositions for improved thermal- and sound-insulation on the one hand, and for greater mechanical strength and durability on the other hand, have been and are still being successfully explored.

These investigations have brought to light a number of differences which exist in several respects between lightweight slags and heavy concrete aggregates. A clear understanding of these differences may lead to improvements in such operations as batching, mixing, pouring and vibration, steam curing, and plant layout, as well as to modification of plant equipment for more economical production.

Porosity of Slags

Not all slags take in equal quantities of water. Since the method of introducing water in slag determines to a great extent how much can be made to enter and remain in the cells of individual grains, large and small, it is obvious that this porosity requires very close examination.

Pale buff slag and other light-colored varieties have been found to be lighter in weight and correspondingly less strong than the dark gray and to have greater storage capacity for air and water. Light-colored material appears to have a very close cellular structure, and the surfaces of the grains are much more "closed" than those of the gray grains. Deep pitting of the external grain faces is most prominent in the dark gray material.

The true specific gravity for all slags which have come under observation is close to 2.5. The apparent specific gravity, on the other hand, varies from 1.25 to 2.0, the lower value for the pale buff, the higher for dark gray.

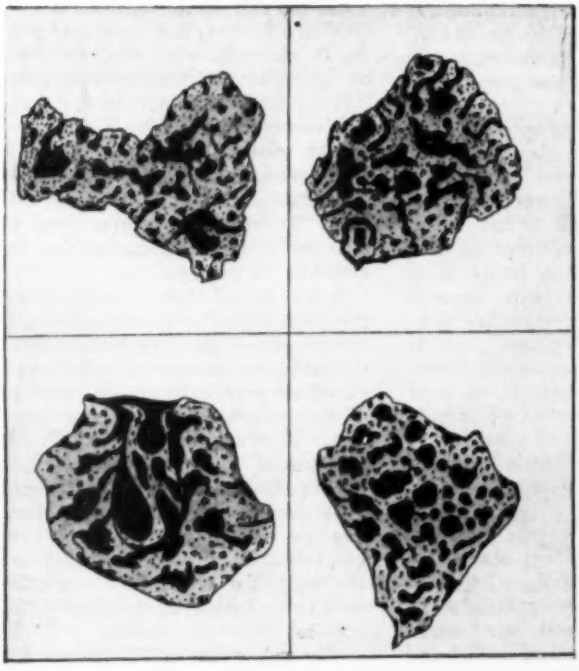
Close scrutiny of the results of a series of crushing strength tests of concrete made with slags having various distinctive colors indicate beyond doubt that the greatest single factor which influences crushing strength is the amount of water which has been introduced in the pores of the grains, large and small, and the amount of surface water clinging to the grains for later hydration of the cement.

Although the spongy structure of the grains, which causes slag to be light in weight, might be expected to attract water, no such tendency appears to exist. It is just the opposite of pumice, another spongy material, which has the trait of saturating itself 100 percent in no time.

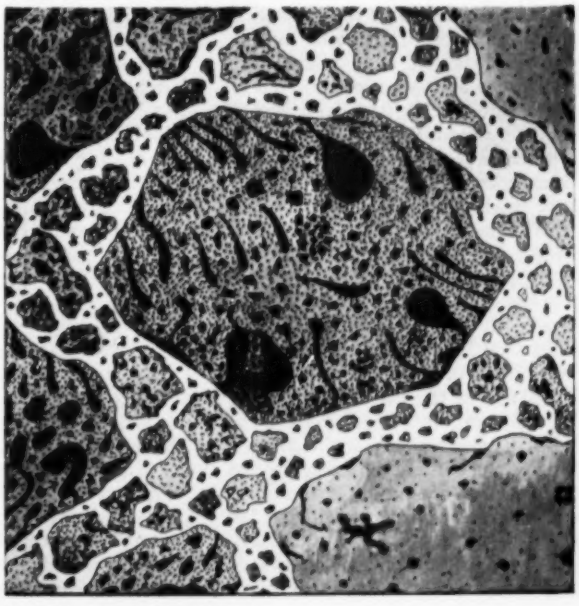
It was determined that a dried pale buff slag, 3/8 to 1/8 in., when sprayed long enough or when exposed to prolonged rain, with all surplus water drained away during 4 to 8 hours after the soaking took place, would weigh about 58 percent more than in a dry condition.

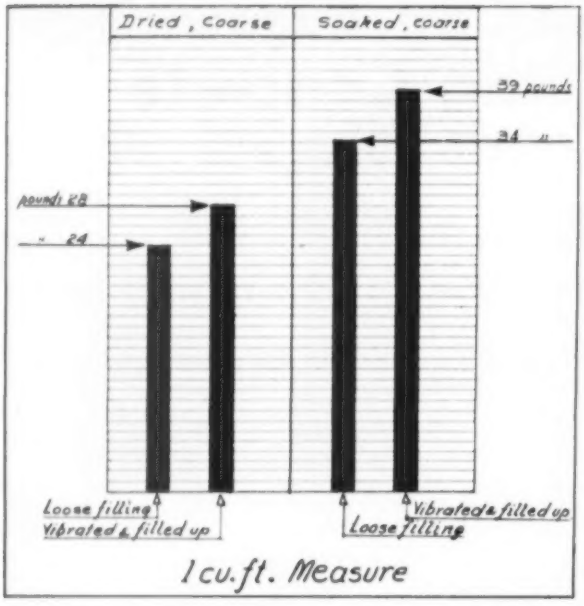
When this same quantity of water was poured into a mixer and the same quantity of coarse slag of the same shipment of pale buff was added, it was found over and over again that regardless of the speed of the machine or the length of the mixing time, the slag at no time took in all the water. The maximum that

A variety of cell structures are found in individual slag grains.



Lean graded mix. Cell space in slag grains to be pre-filled with water. Surface water for plasticity and hydration of cement to be added over and above it.





Graph shows effect of vibration and soaking on weight of slag.

could thus be made to go into the slag was 45 percent of its dry weight or approximately 13 percent less than natural rain or spraying achieved without mechanical or human help.

The obvious conclusion, therefore, is that pre-soaking of any slag, light or dark colored, is a first step which pays the manufacturer a dividend. Stockpiling of large quantities and methodical soaking will pay those concerned, especially manufacturers of blocks and bricks who use a relatively dry mix.

Slags which have been stockpiled over a few seasons, especially over the rainy period or over the winter snowfalls, develop what may be called a seasoned, moisture-content maturity. Water which has invaded the larger pores of the grains slowly percolates through the smaller vesicles. A certain amount of breathing from the warmer pile-interior to the colder pile-exterior sets up currents of water vapor and pressure pervading the entire mass. The glassy pore enclosures are no longer subjected to a short-term wetting process, but are factually in a condition of complete immersion with a consequent development of firm water adhesion.

One time-saving advantage is the elimination of the pre-mixing of slag and water before cement is batched. This will generally amount to a shortening of the complete mixing process of approximately one-third. Another time-saver is accurate gauging of the water to be added, day after day. This practice results in batches of uniform consistency, the all-important factor affecting final strength and product quality.

Weight of Slags

Particularly noticeable is the difference in the external appearance between slags which have been expanded by so-called expansion machines and those obtained from cooling trenches. The first are generally lighter in color than the latter, and they are also lighter in weight. For general comparison, the following weighings were made. Both slags were exposed to continuous dry atmosphere with temperature at 80 to 85 deg. F. Measuring boxes of 1-cu. ft. capacity were filled but not vibrated. The slags appeared perfectly dry. The samples had been turned over several times to permit natural evaporation of enclosed moisture. The pale buff coarse weighed 32 lb., while the dark gray coarse weighed 38 lb., or 18 percent more. The pale buff fines weighed 42 lb., and the dark gray fines weighed 57 lb., or 35 percent more.

Suppose that these two brands had been weigh-batched indiscriminately. Differences of 18 and 35 percent in weight are bound to result in strength variations far in excess of any acceptable tolerance.

Or suppose they had been volume-batched. Would not the weights of the resulting concretes have been widely apart? As the specific gravity of slag has been found to be very close to 2.50, it is obvious that any major difference in physical make-up will have been brought about in the process of cooling (expansion) the molten slag, which explains the aforementioned differences in weight per cu. ft. of slags from 2 different sources of supply.

If then, as a result of what has so far been said, volumetric batching is the logical conclusion, what is the effect of filling a hopper, used as a measure?

A sample of pale buff coarse slag was dried until all moisture had been evacuated, except atmospheric moisture. It was filled loosely in a 1-cu. ft. steel measure, stroked off, and weighed. It was now vibrated and filled until the weight could no longer be increased. It was weighed again. The slag was thereafter emptied, thoroughly sprayed with water and turned over. After half an hour the measure was again filled without vibration, and weighed. Thereafter it was again filled until weight was constant, and re-weighed. The results were as follows:

Weight of 1 cu. ft., dry, loosely filled, 24 lb.; dry, vibrated, 28 lb.

Weight of 1 cu. ft., wet, loosely filled, 34 lb.; wet, vibrated, 39 lb.

The rather interesting and important conclusion which can be arrived at is that it is possible to have more or less slag in a measure, depending on how it is being operated. From the above: the difference is approximately 15 percent, independent of the moisture it contains. That this sample had absorbed 10 lb. of water, or approximately 40 percent of its dry weight, in this case is incidental. The more significant points brought out are:

Variations in weight of slags, from the same source of supply, coarse and fines, water content deducted.

Variations in weight of slags, from two and more sources of supply, coarse and fines, water content deducted.

Variations in weight of slags, depending on how the measuring hopper was filled, water content neglected.

Cell Space in Slags

As we have so far established: the quantity of water which this material can take in its internal honeycombed structure, and its weight per cu. ft. measure, when dry, seem to be inter-related. Some time ago an investigation was made of the possible causes of this cell-space-porosity-weight relationship.

A dark gray sample of coarse slag yielded in excess of 20 percent cell space measured by volume, and a pale buff sample of coarse slag in excess of 31 percent.

It was found that, in addition to the great difficulty in evacuating all the air out of the open cells, a considerable percentage of cells were closed or practically closed, defying all attempts to extract their air content. This was noted especially in the case of the pale buff material. Some particles passing a No. 50 mesh sieve proved to contain more than one air pocket apiece. They had great buoyancy. After floating on the water for hours they gradually sank to the bottom or remained floating just below the surface.

The cell space of 20 percent for

the dark gray was found actually to be in the region of 25 percent of the total volume of the sample; and for the pale buff it attained 40 percent of total volume occupied by each sample, allowance being made for closed cells containing trapped air. Deductions were made for intergrain voids.

Colors of Slags

As color and weight and cell space seem to be variables which appear to move in unison, the question arises whether color, easily gauged by the eye, is not a suitable detector for the other attributes of this material.

Chemical analyses of slags varying in color have not brought out differences in composition worthy of much attention except, perhaps, where sulphur compounds are concerned. It has been found that pale slags carry a little more calcium sulphide and sulphuric anhydride than the dark gray variety. And since sulphides are always indicative of some brittleness in the material they are found in (sulphides are combinations of sulphur with a metal), perhaps the softer, pale-colored grains owe their lesser crushing strength to the presence of the sulphide.

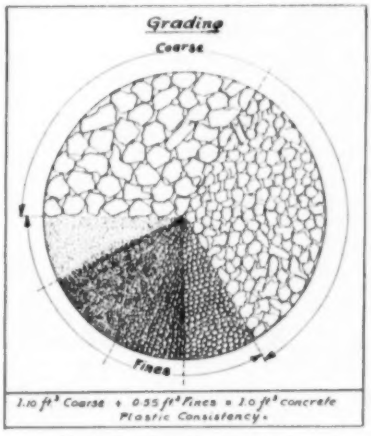
The difference in the physical properties of colored slags may be caused by physical rather than by chemical variation. Those familiar with foundry furnaces know that color and structure of slag can vary over wide ranges for one and the same chemical composition. The difference is attributed to furnace condition, slag temperature at the point of exit from the furnace, rate of cooling, etc. It is assumed, therefore, that for the usual chemical composition the greatest influences on color and crushing strength are the furnace and the cooling conditions.

Air-Entraining in Slag Concrete

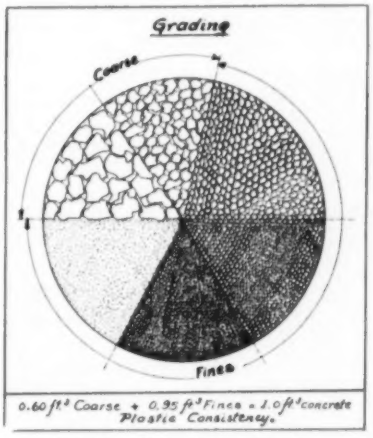
Assuming that only coarse slag is being mixed with water and cement, one would be justified in asserting that the mix contains the maximum of air. This "no-fines" concrete, although of relatively low crushing strength, might have attractive thermal insulation properties.

Assuming, again, that a mix is composed of coarse and fines, but this time so proportioned that all voids in the coarse are filled with intermediate-coarse, and that the voids in all and between all of these are filled with fines, one would be entitled to call this a dense composition, having left as little air as possible in the "inter-face structure" of all its grains. In all probability the crushing strength will be high, but the thermal-insulation factor will be reduced, with a possible sound-insulation factor exceeding the "no-fines" material. The weight per cubic foot may be one-third greater than the "no-fines" concrete. All in all, this is a different building material.

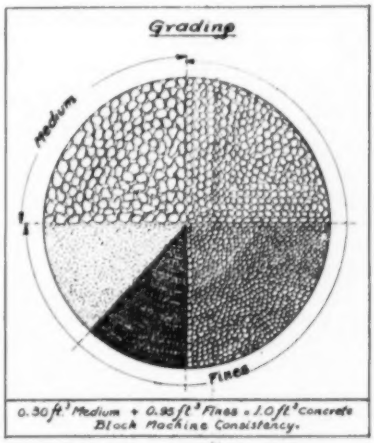
Determinations of the actual air content in expanded slag concrete



Typical open-structure face.



Typical tight-structure concrete.



Typical fine-face texture concrete.

mixes of compositions, as indicated here, are extremely difficult to obtain accurately. A great number of samples have to be tested in order to reach reliable averages, and each test requires patience. Slag concrete has a tendency to "dry out" more quickly than stone concrete, which risks interference with the cement gel formation in its early stages.

It was found that fresh slag concrete, as soon as made, and of a dense composition, contained from 3½ to 6½ percent by volume of air in its pores and voids. This means that each cu. ft. of mix contained from 60 to 110 cu. in. of air enclosed in the mass.

When air-entraining agents were used (either incorporated in the cement or added separately) the experimentally determined air content rose to 14 percent by volume of the fresh concrete. This is equivalent to 240 cu. in. of air per cu. ft.

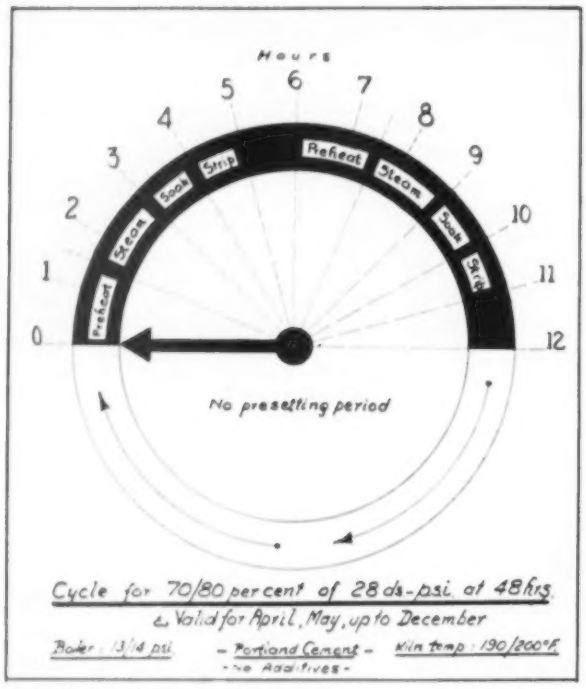
Obviously the crushing strength results confirmed the knowledge that slag concrete does not require any external help to bring about air infiltration in its structure, since it is already overstocked with air. The p.s.i. values at all concrete ages were far below standard strengths.

Grading and Batching

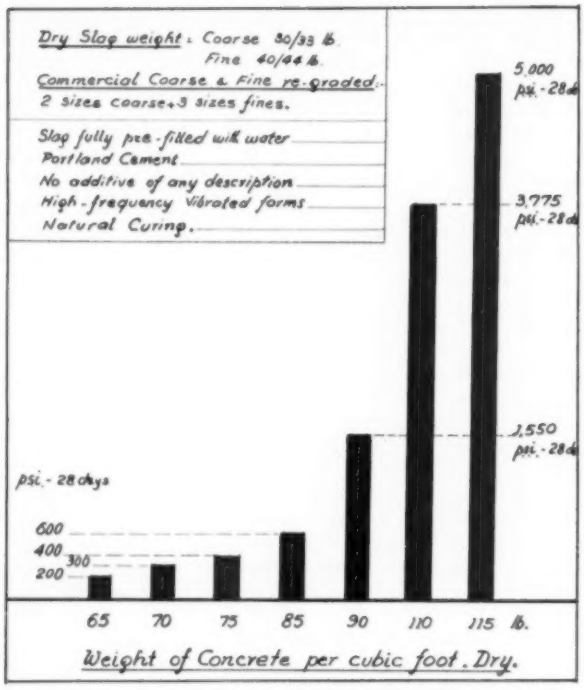
The shrinkage from raw material to finished product is considerably greater in slag concrete than in ordinary concrete. Slag producers supply the sizes ⅜ in. to ⅛ in., called coarse, and ¼ in. to dust, called fines. Sieve analyses have shown beyond doubt that this grading is factually non-existent. All the slag tested up to date has shown a marked deficiency in the sizes ranging from 1/4 in. to 1/16 in., and, for very dense and smooth-faced products, a deficiency in the very fine of No. 50 sieve and below. The intermediate sizes from 1/4 in. to 1/16 in., with 1/8 in. between these two for equal size distribution, are of vital importance for the cost/p.s.i. ratio.

After all, blast-furnace slag concrete is no longer restricted in its use to insulation products; neither is the slag itself limited to being used as a filling material. It has become an accepted lightweight concrete aggregate for structural members with ordinary steel reinforcement, and with prestressed or post-stressed high-tensile steel wires or wire-cables.

That lightweight blast-furnace slag takes from 15 to 20 percent off the dead load of structural members is significant in itself and worthy of recognition and further exploration. This, in addition to the saving



Curing in a one-hour-production kiln.



Compressive strength results and weight obtained with slag treatment and grading.

in dead weight through use of the prestress technique, opens new horizons for the material.

Grading of the sizes should be made on the same basis as that applied to top-grade stone concrete making. It will permit producing slag concrete with the minimum cement for maximum strength and durability. Close cooperation between slag producers and precast manufacturers will pave the road to ever-growing mutual benefits.

Slag concretes are harsh at their best. As the quantity of very fines diminishes, this harshness increases. Some manufacturers add a fine sand to their mix. Others supplement it with powdered quartzlike materials to improve flow and face texture.

While these correctives achieve, or try to achieve, what is immediately required, they factually do not remedy a basic defect. This defect is one of grading. Because of it there is automatically a defect in batching, since a control of limited quantities of pre-determined grain sizes is not possible.

If powdered fines are required for strength or face-finish, why not use powdered slag? No other material has the same quality of bond with cement. Here again, slag producers can remedy a real need and find a lucrative outlet for the dust collectors in the crushing and screening plant.

Below is a short list of dry concrete weights per cu. ft. and the average crushing strengths obtained at 28 days for scientifically designed mixes and grading. Curing was natural at 65 deg. F. The slag weights and sizes were:

3/8 to 1/8 in.....30/33 lb. per cu. ft.
1/4 in. to dust....40/44 lb. per cu. ft.

These were re-screened and then re-grouped as follows: 3/8-1/4 in.; 1/4-1/8 in.; 1/8-1/16 in.; passing No. 50 mesh; and passing No. 100 mesh. Suitable quantities were brought together, reducing the cement quantity required for maximum strength to the minimum. The results were as follows:

Weight of Dry Concrete	Strength 28 Days
65 lb. per cu. ft.	200 p.s.i.
70 lb. per cu. ft.	300 p.s.i.
75 lb. per cu. ft.	400 p.s.i.
85 lb. per cu. ft.	600 p.s.i.
90 lb. per cu. ft.	1,550 p.s.i.
110 lb. per cu. ft.	3,775 p.s.i.
115 lb. per cu. ft.	5,000 p.s.i.

No additives of any description were used with normal portland cement.

Compacting the Mix

Automatic block and brick machines require a mix with a marked tendency to "roll" well into the narrow passages of the molds and fill the corners perfectly. This can be achieved by selecting the most suitable maximum grading and the subsequent intermediate grain sizes. "Under-fining" will yield a slightly open-texture product, whereas "over-fining" will seal external and internal voids and yield a slightly heavier product. The water/cement ratio will be nearly ideal, and the crushing strength required will be easily and economically attained.

Where slabs, sills or lintels, purlins or beams are being cast, the slag-size compositions will vary in accordance with the clearances between reinforcement and forms, the mix consistency estimated necessary to insure penetration in all form cavities under vibration, and, last but not least, the kind of vibration most suitable for as stiff a mix as workable.

High-frequency vibration with relatively low amplitude has been found to place low water/cement ratio concrete of this kind most effectually. Depending on the work involved, the frequency will vary from 5,000 to 10,000 per minute. This is a range seldom attempted for stationary vibrator tables and pedestals. Besides the incomparable advantage of softening up the most unworkable consistency, such vibration does not upset any delicate or difficult reinforcement locations or fastenings.

When more than one vibrator is used on a form (for instance, a long form resting on two or more pedestals), it is of great advantage to have the vibrators synchronized. When in such an arrangement the vibrators are not delivering their impulses in phase on a form filled with concrete, each transmits a motion which the others partly neutralize. Between the vibrators, under such conditions,

there are zones of minimum vibration, and energy is being paid for with no effect. Synchronized vibration, on the contrary, permits use of the minimum number of pedestals and insures that the entire concrete mass is alive from end to end of the form. Uniform compaction of a mass of concrete does have an influence on strength, and it generally cuts the pouring time to the minimum.

Steam Curing

Assuming that the slag grains are saturated with water sufficient to prevent cement grout from entering and filling the cell spaces, and that the concrete has enough water in its grout to permit the cement to reach maximum strength, we are facing a condition which does not exist in stone concrete. And as it does not exist there, we are not justified in assuming that the same end result can be achieved with the same curing technique.

The slag concrete has to evacuate the entrapped water from the spongy interiors of the slag grains, and it has to do this at the right time and in the right way. When doing that, it will, at the same time, heat entrapped air in the cells, expand it, and propel it through and out of the concrete mass. The conditions required to accelerate the set of the cement (hydration) in the mix filling the forms, must be established before setting starts.

The first part of the cycle is heating-up. Products may be heated up immediately or, as is generally done, one hour's production may be collected before the steam is turned on. The heat-up cycle should at all times be gradual. At no time should it be more than 75 deg. F. per hour, and kilns should not be allowed to cool down below 90 deg. F.

The gradual rise in temperature of the concrete mass and the kiln atmosphere brings about the evacuation of both internal slag water and entrapped air before the cement gel hardens.

The steam introduced in a kiln has to have a relatively low water vapor content to prevent excessive wetting of the steel forms and kiln enclosures it impinges on; moreover, the kiln atmosphere is continually being enriched with the vapor evacuated from the slag cells. The steam entering the kiln has to have a high temperature not only to compensate for inevitable losses through walls, ceiling, and doors but also to keep the kiln atmosphere receptive to the evacuated vapors, to keep them in suspension, and to maintain a vigorous pulsating air movement throughout the closed kiln.

Heating-up has reached its end at the point when kiln contents and kiln walls have reached an equilibrium. This, it has been found, is when the dial temperature reaches 200 deg. F., a point generally reached after 1½ hours of heating-up period.

To maintain this temperature for a short while it is generally required to cut down the kiln steam inlet. Maintaining the temperature is known as actual steaming. This period varies from 1½ to 3 hours, depending on the concrete faces exposed to the kiln atmosphere. The length of the steaming period is also governed by the actual temperature losses through the kiln enclosures.

An important item attached to the operation of the boiler is constant gauge pressure steam delivery at 13 to 14½ p.s.i. and kiln inlet valve adjustment to raise the temperature to 200 deg. and to maintain it there.

The period following the steaming is soaking. This is an extremely important part of the whole cycle, as it provides for actual completion of the accelerated set and gradual cooling without chilling, which includes drying, ready for stripping.

In the northern latitudes the complete cycle from the time of closing the kiln for heating-up until it is ready for cooling-off (ventilation) and stripping is, generally five hours in December, January, February, and March and four hours during the other months of the year.

The speed in turn-over with this method of curing has not yet been equalled in plants manufacturing gravel or stone concrete products. Crushing strengths of 2,500 to 2,850 p.s.i. at 48 hours are the rule for slag concretes which develop 4,800 p.s.i. at 28 days.

Spickelmier Company

(*From page* 162)

Rapidex is manufactured in lengths up to 29 feet, and is delivered ready for immediate use. Since the sections are set in place as directly from the truck, intermediate handling is eliminated. Rapidex is not subject to weather limitations, and can be set in any weather in which men can work. Installations are made under the supervision of factory-trained engineers.

Among the many types of buildings already constructed with Rapidex are schools and churches, residences, office buildings, apartment houses, hotels, terminals, and plants for manufacturing.

Electronic Tester

(*From page* 158)

The code number is noted. All that is now necessary on the site to make certain that this particular mix design is constantly obtained, is to turn the switching-on knob to "test", immerse and raise the prodder, turn the code knob to the already determined code number, and note the steady position attained by the dial's pointer. Material adjustments to the mix may be made according to the reading ("too wet" or "too dry") shown on the dial.

Conversely, the ratiometer may be used for actual determination of the water-cement ratio of mixes.

Mixes of varying proportions of aggregates and with varying water-cement ratios for each proportion are made and the numbers determined as shown in the accompanying table, which is published by permission of the Building Research Station of Britain's Department of Scientific and Industrial Research from the *Report of Special Investigation* made by the station on the ratiometer.

By plotting a curve for each series of code numbers for a given proportion of aggregates, the actual cement-water ratio of a mix that is not correct can be obtained by turning the code number knob until the dial's pointer is at the center of the "O.K." zone. By reading off the curve for the determined code number, the actual cement-water ratio may be obtained.

The width of the "O.K." zone corresponds to a difference in the water-cement ratio of between 0.04 and 0.08.

The exposed metal parts are all made of corrosion-resisting light alloy. There is full protection against the accidental shorting of the electrodes in testing newly-laid reinforced concrete.

A broad leather strap enables the operator to hang the box comfortably in front of himself, leaving both hands free for operations.

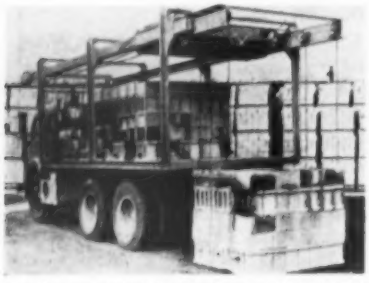
A rechargeable battery is enclosed in the instrument case, but for site where electric power is available a convenient battery eliminator/charger has been designed that fits snugly into the battery compartment. The only maintenance needed is to wipe the electrodes after each use.

Hecker Quarry, Inc., at New Athens, Ill., now operates New Athens Ready Mix Concrete. In the new venture are Cletus Lischer, Harold Lischer, and Tom Wilson. Cletus Lischer also operates a lime-spreading service.

NEW MACHINERY and SUPPLIES

• Block Truck Body

One man unloads concrete block three times as fast as a two-man crew working manually when your truck has the Lectro-Lift body, *Wm. Bros Boiler & Mfg. Co.* reports. A load of 432 8-in. block

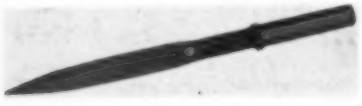


can be unloaded in 8 minutes. The block can be placed directly into excavations 8 ft. below ground level. Bed lengths of 12 ft., 14 ft., 16 ft., and 18 ft. are available. Power for the unit comes from a 3-phase, engine-driven generator.

Our Identification No. 101

• Tool Breaks Concrete

A moil-type tool of unique design, the Sabur Point, has been developed by *Brunner & Lay* for concrete breakage. The unit has a curved blade to set up wedge-like action in shattering the concrete, while the tapered point rides free during the breakage, relieved for its main job of penetration. Points stay



sharp longer as a result; concrete and breakage rate is doubled, B&L says. Two sizes are offered, both with hexagonal shanks and both 16 in. under the collar. The 6-in. shanks are 1⅛ and 1¼-in., respectively.

Our Identification No. 102

• Powered Snow Shoveling

Snow plowing with the Prime-Mover model 15 has been made even more easy with the addition of a spring-type counter-balance to let you effortlessly raise

and lower the 50-in. blade, reports *Prime Mover Co.* Ballast is carried by the P-M's hopper or flatbed bodies, or they can be used to haul sand, etc., for ice control.

Our Identification No. 103

• Handy Circuit Tester

No need to be in the dark when the lights are out! A combination flashlight and circuit tester lets you turn off the

current and check for faults in safety. The flash batteries give sufficient current to indicate whether or not the circuit is operating properly. Comes with alligator or insulation-piercing needle clips. *Gadgeteers,* Chicago 47, Ill.

Our Identification No. 104

• Portable Vibrator

A hydraulic clamp is used to mount a new *Cleveland* portable air vibrator on railroad cars, bins, hoppers, chutes, etc., to speed their discharge. The unit (type HCRR) will unload a car of crushed stone in two minutes, Cleveland says. It has a C-clamp head, a hand-operated push-pull pump, and a 6-ft. hose connection between pump and cylinder. The vibrator head weighs 86 lb., the pump and hose, 23.

Our Identification No. 105

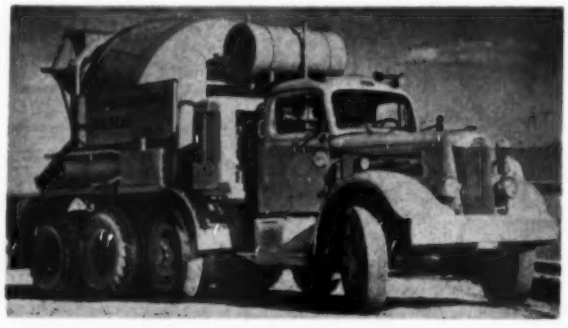
• Tough, Pliable Glove

The newly-designed Tripl-Palm work glove has proven a big favorite for handling concrete block, reports *Surety Rub-*

ber Co. Made with a special Vinyl-coated palm, the glove is highly-resistant to abrasion, yet is soft and pliable for comfort and flexibility. Inside seams are eliminated at the joining of thumb and palm.

Our Identification No. 106

• Unusual Truck Axle Arrangement



Notable advantages in payload and load tolerances are reported for a new *White Motor* truck which features an additional "Steering Pusher" axle mounted ahead of the tandem rear-drive axle.

Mounted independently, but geared to front-axle movement, the added axle steers one degree for each three degrees of front-axle steering, giving the truck unusual stability regardless of terrain, White says. In addition, the arrangement provides better weight distribution and flotation.

Tested in all-around service for a three-month period by W. E. Anderson Sons Co., Columbus, Ohio, the new Whites nicknamed "Centipedes", mounted a 5½-cu. yd. Jaeger Mix-Plus to serve ready-mix users. Equipped with two-way radio and power steering for easier control, the Centipede handles a 24,000-lb. payload and 100 gal. of water, distributing the load thus: 8,500 lb. on front axle, 9,000 lb. on pusher, and 31,290 lb. on the rear tandem.

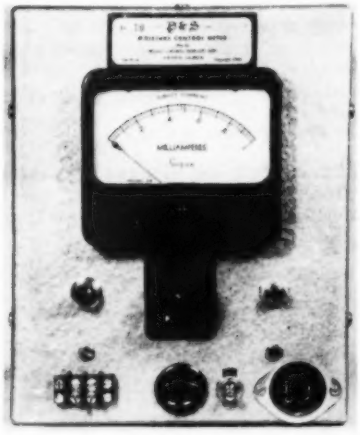
Anderson uses puncture-proof tubes in the truck's 12 tires. The front and pusher wheels take 9.00x20 tires, the rear tandem using 10.00x20 road-lugs. From front axle center line to third axle center line, the Centipede's wheelbase is 165 in.

Working from its main plant and six batching plants in the central Ohio market, Anderson trucks covered 2½-million miles last year. The company operates several other Whites, including 31 double-axle units with 4½-yd. mixers, 12 single-axle jobs with 3-yd. mixers, plus several dump trucks and White-powered dump trailer-tractors.

Our Identification No. 107

• Controls Batch Moisture

Claimed to be the greatest block making development since vibration, a moisture control meter has been devised to check the amount of moisture in each batch of raw materials and add the additional water needed to make an ideal batch. Resulting block have a more even



texture, with water marks and height held to low tolerances.

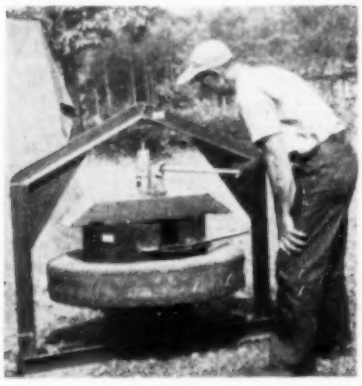
Developed and perfected by Milton Posey and Roy Sargent, the P&S Moisture Tester operates electronically with electrodes in the mixer and a solenoid valve on the water supply line. A veteran in the concrete plant machinery field, Mr. Posey has operated the Precast Concrete Products Corp., Atlanta, for the last six years. Mr. Sargent is a professor of electronics.

The meters will be available to the concrete manufacturing industry early in 1954. Sales and installations will be handled by *Roy Darden Industries,* Northside Box 95, Atlanta, Ga.

Our Identification No. 108

• Remove Tires Easily

Truck tires can be removed without tools and with no danger to the tire or the operator using a device, the Truc-



Tire, developed by *Louisa Farm Implement Repair.* The welded-steel unit requires only a few strokes on the hydraulic jack to free any tire from its wheel or rim. Truc-Tire needs little space, no maintenance, and can also be used to hold a tire during inflation so as to afford protection, should the locking ring explode.

Our Identification No. 109

• Cast Flagstones

"If you can mix water, sand, and cement, you can make unique and outstanding attractive flagstone," says *Chase Concrete Mchy. Co.,* advertising its 18-piece set of all-steel flagstone forms. The irregular geometric units, cast in different colors, form walks, patios, pools, etc.

Our Identification No. 110

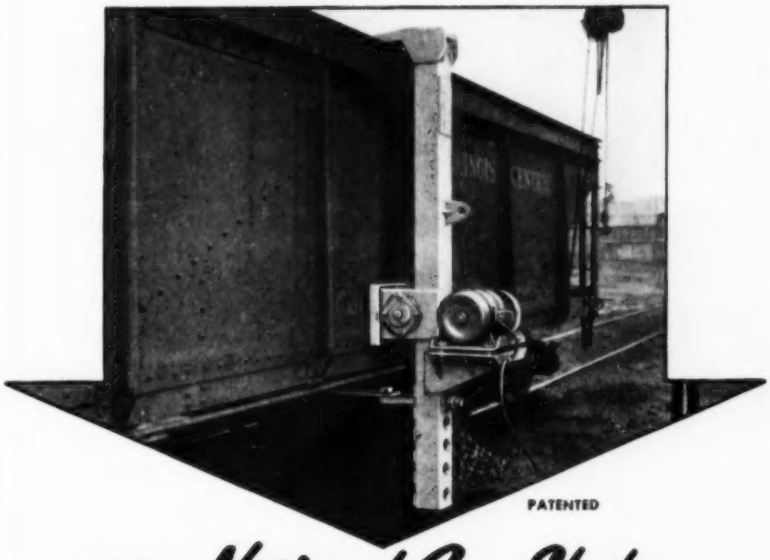
• Sturdy Block Saw Blades

Built to take severe flexing, side pressures, and bumping in operation, a new masonry saw blade has been introduced

by *Robert G. Evans Co.* The new process molds a strong center core of strongly-woven synthetic fabric into the blade. Sold under the name Target, each blade has a color to indicate its use.

Our Identification No. 111

Quicker, Cheaper Unloading



with *National Car Shaker*

Hundreds of National Car Shaker installations have PAID FOR THEMSELVES through big unloading savings. Many users say that they save up to 80% on unloading costs!

One man can unload coal, coke, cinders, sand, stone, aggregates or other bulk materials *in a few minutes,* under normal conditions. National Car Shaker eliminates the dangerous part of unloading work, as men are not needed in or on cars.

WRITE TODAY for full information, prices and descriptive literature on the LOW COST National Car Shaker.

National Conveyor & Supply Company

348 N. HARDING AVENUE CHICAGO 24, ILLINOIS

• Simple Mortar Laying

Every one of your customers is in the market for a new device that enables the professional to spread mortar four times as fast and lets the amateur do it as fast as a trowel-wielding professional can. Known as the Mortar-Plane, the device saves 10 percent on material and reduces arm movement 50 percent, *Kakest Co.* says.

The foot-long, rust-proof metal Plane has end gates to regulate the flow of the mortar. A guiding edge rides along the edge of the block, giving a smooth even strip of mortar. The Plane weighs 1½ lb. empty. One filling spreads mortar over four or five blocks.

Our Identification No. 112

EXPAND your line – your market – your profits

with the new.. KENT Lintelator

Lintelator with companion aggregate hopper now available

Nothing in the building field has been accepted more readily or become entrenched more quickly than concrete lintels.

That's logical, because they have the same texture as the blocks and fit right into the building. They cost less than steel and are installed by masons.

Kent Lintelators make them rapidly, at low cost, in sizes up to 8 x 12 x 10 ft.; sills also which have found ready acceptance.

Lintels and sills are plus items that will expand your sales, increase your profits and improve your overall operating position.

Write today, right now when it is in your mind, for the lintelator story.

The KENT MACHINE COMPANY

CUYAHOGA FALLS, OHIO

CONCRETE PRODUCTS MACHINERY SINCE 1925

Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario

• Extra-Tread Truck Tire

More tread rubber and much stronger carcass construction gives longer original mileage and a sounder base for recapping, says *U. S. Rubber*, introducing the Royal Super Fleetway. First commercial tire made with super-tenacity rayon cord 20 percent stronger than ordinary rayon, its other features include 79 percent more resistance to flex fatigue and 20 percent more rupture resistance, thus assuring more recaps. Deepened tread and thickened undertread join with individual stabilizers on the extra-high ribs to add considerably to tire life.

Our Identification No. 113

• Long-Wearing Gloves

Guaranteed to outwear two or more pair of regular work gloves, Plastic-Dot gloves will save you 40 percent of your

annual glove bill, says *Riegel Textile Corp.*, launching an intensive national promotional campaign.

Our Identification No. 114

• Block Loader

As much as 500 lb. of block per lift can be loaded or unloaded by the Magic Muscle, a one-man operated device developed by *Wm. Bros.* The electric hoist travels on a monorail boom mounted on

the truck bed behind the cab. Power comes from a gasoline-driven generator. Pushbuttons on the lifting column control the two-prong fork which fits into block cores and pallets. Magic Muscle fits all truck or trailer bed lengths from 12 to 27 ft.

Our Identification No. 115

Industrial Lighting standards, a 40-page reprint of the American Standard Practice for Industrial Lighting has been issued by the Bureau of Labor Standards, Washington 25, D. C.

Trade Literature

Batch Mixers and Skip Loaders to Match are described in this new *Gocorp* bulletin. The six mixers include the big new 75-cu. ft. model which enables your operator to put each batch through the complete mixing cycle and still keep up with high production block machines, even when using lightweight aggregates, Gocorp says. The skip loaders can be installed with inclined or vertical tracks.
Our Identification No. 116

A Mobile Yard Crane that will handle up to 7,500 lb. and has a telescoping boom that swings in a 180-deg. arc is described in this *Pettibone-Mulliken* bulletin. A 75-hp. engine drives the heavy-duty unit, which uses hydraulic motors to cushion boom action. The boom can be extended from 12 to 18 ft. and the crane can be ballasted with about 8,000 lb. of additional weight, including liquification of the tires.
Our Identification No. 117

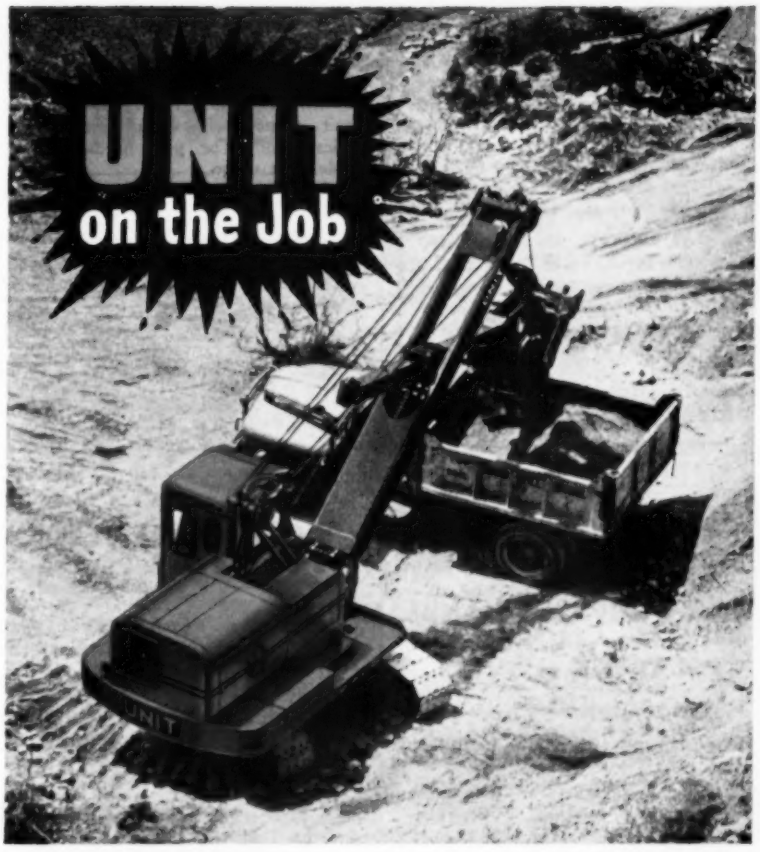
A Rotary External Vibrator, a new design driven by an electric motor, is described in this *Viber* literature. The Viberlac has a highly versatile new mounting clamp that permits the unit to be attached anywhere, and removed at will, if desired.
Our Identification No. 118

A Truck Crane-Shovel that uses a specially-patented turntable which gives faster swinging and less thrust, consumes less power in swinging, and needs little maintenance and lubrication is described in this *Little Giant* literature. The Model L is a ¼-yd. shovel, and a 6,000-lb. crane with a 10-ft. radius.
Our Identification No. 119

White Cement for enhancing the beauty of masonry walls is described in this StoneseT brochure published by *Medusa Portland Cement*. Instructions for mixing the non-staining cement, tables for estimating how much mortar is needed for various type wall constructions, and other valuable data are included.
Our Identification No. 120

Concrete Pipe Can Be Protected against chemical attack by sewage and industrial wastes, this *Hamilton Kent* bulletin advises, giving technical details and application instructions for ReXon No. 2, a chemical coating sprayed or brushed onto the concrete surface.
Our Identification No. 121

Water Repellent liquid made from transparent silicone that is sprayed or brushed onto almost any masonry surface cures to a high degree of repellency and has a long active age, this *Arco Paint* bulletin on Arroc says.
Our Identification No. 122



SWING SPEED makes PAY LOADS!

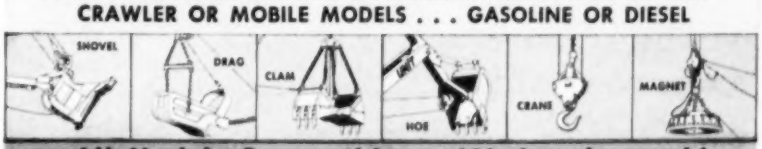
Here's a UNIT ½ Yard Shovel doing a PRODUCTION DIGGING JOB in a gravel pit. UNIT owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction and the many mechanical features, plus the ECONOMICAL PERFORMANCE and LOW UP-KEEP which all add up to EARNING POWER. Why not investigate what UNIT can do for you — on YOUR next excavating and material handling job?

SEE FOR YOURSELF: *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

UNIT CRANE & SHOVEL CORPORATION
6329 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

UNIT

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

A-7147-2/5-PC

You Can Control the Quality of your concrete product right in your own plant, this 12-page discussion of compression testing points out, showing the many advantages to having your own testing machine. Typical case histories illustrate the point. One page describes the *Yoder* testing machine, now being sold by *J. A. Jones Concrete Mchy. Co.*
Our Identification No. 123

Fork Lift Trucks in sizes from 1,500- to 15,000-lb. capacity are shown with a full range of attachments in this *Towmotor* brochure. Among the case histories given is that of a scoop unit which replaced a dragline to move 30 cu. yd. of sand per hour.
Our Identification No. 124

Porous Concrete Drain Pipe, designed for underdrainage and leaching wherever excess water is a problem, is described in this *Walker Cement* bulletin. Minute channels throughout the Poroswall pipe admit water, without clogging, and carries it off. The pipe needs only a simple joint union.
Our Identification No. 125

Hand Hoists for shop duties, with capacities from ½ to 2 tons, are shown in this 8-page *Yale & Towne* booklet. The lightweight Yale Load King hoists (only 36 lb. for the ½-ton unit) give up to 95 percent efficiency for faster, easier lifting, and have an instantaneous braking and release arrangement.
Our Identification No. 126

Air Chisels for scaling and chipping and many other uses around a concrete plant are described in literature from *Superior Pneumatic.* The Big Bully and Bantam Bully do more work with less power and less cost in both fatigue and money, the literature says.
Our Identification No. 127

Mixer for plaster and mortar, the Rex No. 6, is described in this brochure from *Chain Belt.* Tire-mounted on a single axle, it is said to save time and cut costs, while preparing a better mix.
Our Identification No. 128

Belt Weighing Meter system developed by *Trans-Weigh Co.* is described in this instrumentation data sheet from *Minneapolis-Honeywell.* The meter provides a continuous weighing of a steady flow of material on a conveyor belt, and totalizes the accumulated tonnage.
Our Identification No. 129

Precast Steps and Porches can be made in 4', 5', and 6-ft. widths, with fieldstone or brick finishes, this *Shawnee* leaflet explains. The reinforced units feature hollow type construction, come in several colors, and have non-skid surfaces on all treads and platforms.
Our Identification No. 130

Concrete Color Chips are presented in this folder from *Landers-Segal.* Several shades of yellows, orange, buff, browns, reds, blues, greens and black are among the 24 samples shown on the card. Mixing ratios are indicated.
Our Identification No. 131

Concrete Curing is considerably simplified with Duscure curing powder, this literature from *Reardon Industries* points out. Sprinkled as a dust, Duscure forms a film over concrete so that it can cure without the use of water, paper or inflammable liquids.
Our Identification No. 132

Septic Tank Forms to meet sanitary codes "around the world" are described in this literature from *Howell-Hogan.* Other details given include daily cost and profit potentialities and other financial details relating to the operation of a septic tank business.
Our Identification No. 133

Concrete Plants engineered by *Standley & Co.* are described in this literature. The firm designs plants to conserve space and fabricates all units under a single control.
Our Identification No. 134

Fork Lift Trucks for concrete producers are shown in *Tracto-Lift* literature. The units are made with capacities from 3000 to 15,000 lbs. They have a variety of attachments, including a front-end bucket for bulk material loading.
Our Identification No. 135

Pneumatic Vibration equipment for use in various phases of concrete plant operation are shown in a 16-page catalog just issued by *Cleveland Vibrator Co.*
Our Identification No. 136

DECEMBER, 1953

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144						

Please send more information on products shown in the Advertisement on:

Page____ Product____ Adv.____

Page____ Product____ Adv.____

In addition I would like information on:

_____

_____

Name____ Title____

Company____

Address____

City____ Zone____ State____

Masonry Cement Guide. General information and specification data on procedures to follow in construction, including methods for averting efflorescence, provisions for proper flashings and drips, precautions for hot or cold weather construction, recommended types of mortar joints and considerable other information is given in this 8-page brochure describing *Medusa's* BrikseT Gray Masonry Cement. Tables serve to guide the amount of mortar needed for various types of walls.
Our Identification No. 137.

Prestressed Concrete with *American* high tensile wire and high strength reinforcing strand is shown in photographs in this 8-page brochure. Technical details are included.
Our Identification No. 138.

Batching Plants built by the *Noble Company* are featured in this illustrated 16-page booklet. Photos, specifications, dimensional drawings and other details of complete batching plants are included, together with photos and descriptions of the different units that make up the Noble-engineered plant.
Our Identification No. 139.

Tractor-Trailer trucks now can have power take-offs made from flexible shafting that is dust and oil-proof, *Stow* Mfg. *Co.* says in this bulletin. The flexible shaft replaces delicate couplers, increases pump life, provides quiet operation, is easily interchanged, and reduces maintenance, Stow says.
Our Identification No. 140.

Continuous Mixing with the Anthony mixer offers many advantages—less power, reduced wear, and the like, says this leaflet from the *W. A. Anthony Engr. Co.* Mixers are made in six different models, with 20 or 30-yph capacities.
Our Identification No. 141.

Block Delivery is simplified with the *Bros* Lectro-Lift truck body, this bulletin shows. Using a special lifting frame, one man can load, deliver, stack and unload cubes of block with no danger to the block. The Lectro-Lift body mounts on a conventional truck chassis. Details in the bulletin include delivery costs per block, and other data.
Our Identification No. 142.

Insulating roofing tile, precast with perlite, is described in this bulletin. Lightweight *Castlite* concrete slabs (2⅝-in. thick, 24-in. wide, and 36 or 48-in. long) are a "one package" roof deck that combines structural strength with insulation. Sawing, cutting and nailing is done with ordinary tools.
Our Identification No. 143.

Greater strength than most specialty aggregates is said to be imparted to lightweight concrete by *Cemtein,* a protein additive. Cemtein block will carry over 500 psi. pressure. It has a much lower K-factor than conventional concrete, this leaflet says.
Our Identification No. 144.

Trade Notes

H. E. Hartman

Howard E. Hartman formerly sales-service representative for the Lone Star Cement Corporation and more recently engineer for Concrete Joists & Products Company, has been appointed sales representative and service engineer for the Metropolitan Chicago Division of Marquette Cement Manfacturing Company. His appointment to the Marquette staff was announced by Henry J. Auer, sales manager for the company's Chicago Division.

A graduate of Iowa State College with a degree in Civil Engineering, Mr. Hartman was inspector for the Iowa State Highway Commission for five years. He is an expert in the uses of cement and concrete.

P. C. Horton

Calsi-crete Corporation, a division of the Jackson and Church Company, Saginaw, Mich., now issuing franchises for manufacture of the hydrous calcium silicate building material, Calsi-crete, has named Paul C. Horton as chemical engineer.

Mr. Horton was formerly a process engineer with Saginaw Steering Gear Division of General Motors Corporation and quality control manager of Lufkin Rule Company. He will act as consultant for the chemical engineering aspects of plant layout and production of Calsi-crete by firms holding franchises.

The appointment of new representatives for the Southeast and Southwest has been announced by Bergen Machine and Tool Company, Nutley, N. J.

Roy Darden, 921 Beverbrook Drive, N. W., Atlanta, Ga., will handle Bergen products and parts in Alabama, South Carolina, Georgia and Mississippi.

John S. Chase, Chase Building Products, Inc., 302 Interurban Bldg., Dallas, Tex., will represent the company in Arizona, New Mexico, Texas, Oklahoma, Arkansas, and Kansas. A past president of the N.C.M.A. he has been intimately connected with the concrete products industry for many years.

COMMENT
from the
BUTLER ENGINEER

. . . . of Planning Ahead of Your Market

A man called at Butler Bin not long ago. Told the switchboard gal (her name's Jane, if you want to know) that he wanted to see me.

Said Jane, "May I have your name, sir?"

He replied, "Just tell him I'm the only contractor over 21 *not* bidding on the Ohio Turnpike."

•

As the Butler Engineer I work on small jobs, big jobs, complex and difficult jobs, but the most difficult job I have is to get our customers to let me plan their Ready Mixed Concrete Plants—*not* for the next fifteen minutes but for the next fifteen years.

Since costs for erection, housing, piping and wiring are almost the same for a small Plant as they are for a large one, the actual additional money spent for a somewhat larger bin and more capacity in the elevator and the batching equipment is small indeed when compared with the cost of the fleet that carries the concrete. And, less expensive to plan adequately now than to add capacity later.

As you know, it's the efficient and quick dispatch of trucks through the Plant that spells the difference between nuts or nuggets of gold.

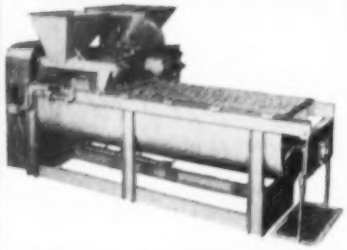
So after determining what is now required for your present market, plan ahead *now* for expansion. The extra money involved is small, efficiency is generally increased and your investment is protected for the future.

Think BIG enough and PLAN big enough with

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

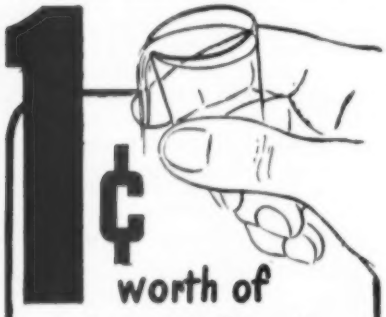
Jones (formerly Yoder)
CONTINUOUS MIXER



Embodies many successful new features, such as positive, non-clogging, vibrating belt feed, insuring constant volume of aggregate regardless of moisture content—no need for costly weighing equipment and moisture determinations.

Accurate proportioning through adjustable aggregate gates. Variable Speed drive for requirements ranging from 5 to 20 cu. yds. per hour. Cost only half that of batch mixer. More thorough mixing —gives up to 50% higher strength than 5-minute batch mix. Special advantages for lightweight aggregates. Illustrated literature and other information on request.

J. A. Jones CONCRETE MACHINERY
108 Horning Road, Pittsburgh 34, Pa.



1¢ worth of
Spray-O-Bond
Plasticizer Per Bag
Gives Concrete Units
Greater Cohesion
Increased Plasticity,
Better Texture.

We'll prove it! Send for a free sample of Spray-O-Bond Plasticizer today.

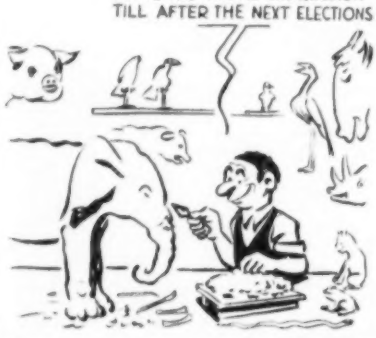
spray-O-bond
2225 N. Humboldt Ave.
Milwaukee 12, Wisconsin

Botched Batches

Mad World

IN the final heat blasts of an abnormally hot summer the nonmetallic minerals, their derivatives, and the people who produce them, made of fair amount of zany news copy. A quarry near Riverside, Calif., rated headlines as the result of the discovery of two extremely rare and completely useless materials with the gosh-awful names of scawtite and afwillite. Also in the awful name category was the critter held responsible for a 175,000,000-year-old footprint found recently in a quarry at Doylestown, Pa. The beast was identified as a chirotherium, which may adequately explain why it became extinct.

The animal kingdom also got some attention from an obscure branch of the concrete industry at Volga, S. D., where a farmer proudly announced



that his concrete sculptures include all known quadrupeds from aadvark to zebra. The fellow says he started sculpting back in the 30's when there wasn't much else to do, and just sort of got absorbed in it.

Then from the Stayton, Oreg., *Mail* there's a delightful item about the Tuffstone Company's open house at the hillside quarry "five miles east of Sublimity." Sublimity, as everybody knows, is just a hoot and a holler this side of Utopia.

Larceny shows up in the news clippings from Leavenworth, Kans., where The Geiger Cement Co. was diddled out of $61 by a woman who entered the office on the pretext of weighing herself, but who paused long enough on the way out to clean out the cash register. According to the Leavenworth *Times*, the office manager was able to give a good description of the woman, "including the fact that she weighed 25 lb." With a clue like that, even Fearless Fosdick should be able to crack the case.

Confirmation

WE'VE just received a letter from R. B. Hindman of The Marietta Concrete Corporation which provides an interesting footnote to our recent "Ride 'Em Cowboy" item. Regarding our assertion that a rodeo-like effect is bound to be created whenever two or more lift-trucks operate simultaneously in the same general area, Mr. Hindman writes: "I thought you might be interested to know that while I was at the plant of Cinder Products in Cincinnati, I observed the skillful and high-speed handling of the forks. Ed Johnson, the owner, informed me that his drivers are also owners and drivers of stock car racers and in their spare time they have 'hopped up' his lift-trucks. It certainly was exciting."

Old Shell Game

IN gathering material for our July issue's detailed description of the new Lehigh cement plant at Bunnell, Fla., we dredged up some whopping statistics that were somehow or another edited out of the final copy. The plant uses coquina shells in place of limestone, and somewhere along the line we gleaned the information that approximately 2,250,000 shells go into the production of each barrel of cement.

Anybody with good sense would surely let it go at that, but our fondness for big numbers is something to reckon with, and pretty soon we found ourselves playing jauntily with figures which make even the public debt look like small change. Producing at its rated capacity of 4,000 bbl. per day, 300 days per year, for the 100-year estimated life of the property owned by Lehigh, the Bunnell plant will consume around 270,000,000,000,000 coquina shells. While it isn't the sort of number we usually have much truck with, we believe that for conversational purposes it may be referred to as 270 trillion. Regardless of how it's rendered, it leaves us a little bit shell shocked.

A partial interest in Empire Concrete Products, that was formerly held by C. H. Farrington, has been acquired by Frank Spangler, president. At the same time Richard Carper, a salesman of the Portland, Ore., firm, became vice-president, and Milton Schultz, who was formerly in charge of the expanded-shale plant near Banks, Ore., was named secretary-treasurer.

WORLDWIDE ACCEPTANCE

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COLUMBIA (S.A.)
BORNEO
PARIS
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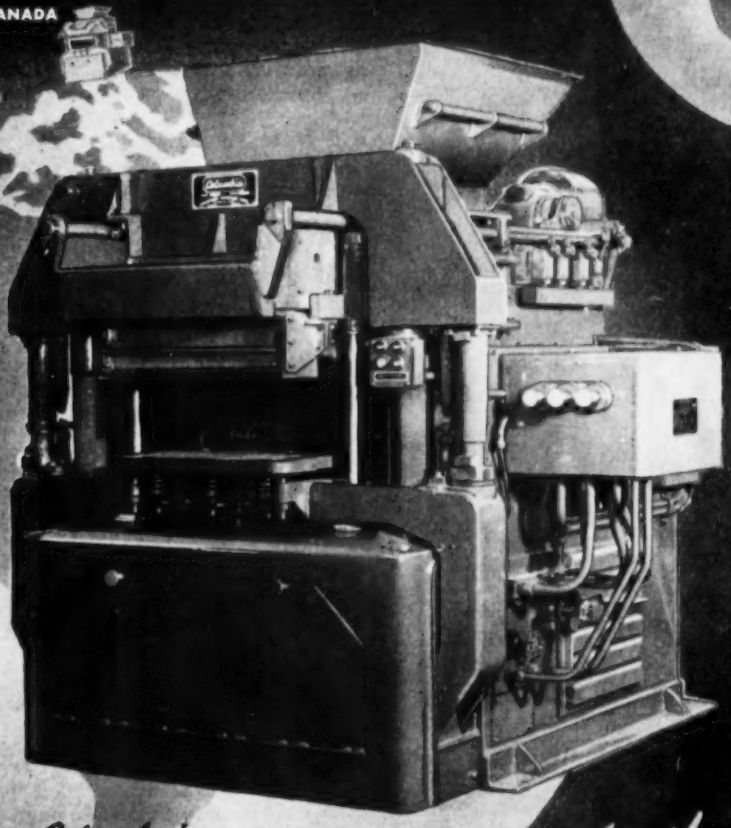
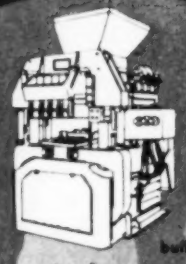
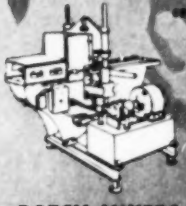


Columbia's MODEL 12
3-BLOCK MACHINE

Now!
Available on lease-purchase or outright sale.



MODEL 8
2-BLOCK
Fully-automatic 2-block machine built to highest standards, competitively priced.



BLOCK SPLITTER
Fully-automatic or semi-automatic.

BATCH MIXERS
12, 25 and 50 cubic foot sizes.

District Offices: Wisconsin, Ohio, South Carolina, Mississippi, Florida, New Jersey, Virginia and California.

Columbia BLOCK MACHINES

...famous for the blocks they produce!
...accepted for their earning power!

Throughout the United States and abroad, Columbia concrete block making equipment is known for its ability to produce highest quality products at an investment which realizes a comfortable margin of profit for their owners—what more can you ask of a production machine?

Investigate Columbia's one, two or three-block machines today! Write for free catalog.

Columbia MACHINE

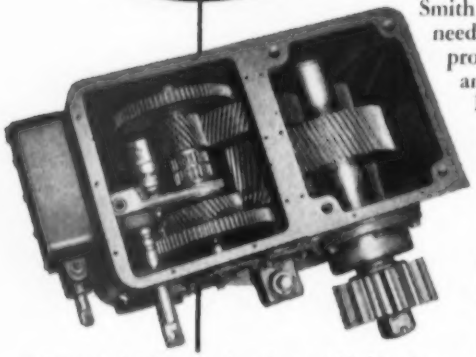
Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON
Factory Branch and Warehouse at Mukwanago, Wisconsin

Soaring to New Heights in Truck Mixer Design!

SMITH Scores Another *First*

Smith was the *first* high discharge truck mixer . . . *first* to eliminate the need for hoist or ramp . . . *first* with a controlled discharge . . . *first* to provide visible mixing . . . *first* with feed chute charging . . . *first* to announce fluid drive as standard equipment . . . *first* with LOAD-LIMIT models. And now, Smith is *first* to come out with a

New 2-Speed Transmission Built to Aircraft Specifications



Transmission by Foote Brothers Gear and Machine Corporation. Designed and built especially for the T. L. Smith Company. Note the duti-rated, lifetime Helical gears and ground shafts, made of special high alloy nickel steel. Machined to amazingly close tolerances that assure long life and trouble-free operation. What other truck mixer has anything approaching this in high quality design and construction?

You know Smith-Mobiles have always had smooth-running, dependable transmissions. Now — the new De Luxe Model Smith-Mobile has a *2-speed* transmission, even more dependable and as smooth-running as a watch. You can drive the drum at 2½ R.P.M. with no laboring of the engine and no surging. Or, you can run it as fast as you want. This new transmission is built to aircraft tolerances. It has Helical cut, heat-treated gears in a rugged, cast case . . . yet it is several hundred pounds lighter. The enclosed, multiple disc clutches run in a bath of oil.

The new De Luxe Model was completely redesigned for even greater efficiency. Gross weight is cut nearly 800 lbs. The overall length is much shorter. Better weight distribution allows bigger legal payloads. And it has the most accessible engine of any truck mixer on the market. All this, without any increase in price. Get the facts. Ask your Smith distributor for literature.

THE T. L. SMITH COMPANY

2887 NORTH 32ND STREET • MILWAUKEE 45, WISCONSIN, U. S. A.

Affiliated with ESSICK MANUFACTURING CO., Los Angeles, Calif.

SMITH
THE T. L. SMITH CO. MILWAUKEE U.S.A.

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

A 7631-1P

There's a Yale hoist for every lifting job!

Got your hands full with a big lifting job? With a Yale Hoist, you can perform your lifting jobs easily, quickly and at considerable savings because YALE gives you a hoist that's made to order for your particular type of lifting.

You name it—YALE makes it! Electric Hoists (wire rope and chain types)... Hand Hoists... trolley and hook suspension types. Capacities run from 500 pounds to 40 tons. And YALE Hoists are synonymous with quality because high YALE standards are guarded by YALE quality control in every phase of manufacture.

Get in touch now with your YALE Distributor. He's a trained man, an expert on hoisting equipment, and he can suggest exactly the Yale Hoist that will do more lifting for you and at the same time slash costs.

You'll find your YALE Distributor conveniently listed in the Classified Directory. (Or mail the coupon.)

This YALE Midget King Electric Hoist is truly a general purpose power hoist that defies users to find jobs it can't perform swiftly, safely and economically. It works for mere pennies a day... can be raised and lowered with just one hand on the simple bar grip control. Capacities range from ⅛ to 2 tons.

YALE*

MATERIALS HANDLING EQUIPMENT

*Registered in U.S. Patent Office

Yale Hoists are sold exclusively through INDUSTRIAL DISTRIBUTORS

MAIL THIS COUPON TODAY

The YALE & TOWNE Mfg. Co., Dept. 4512
Roosevelt Blvd. and Haldeman Ave., Phila. 15, Pa.
Please send me my FREE copy of the Yale Hoist Users and Buyers Guide.

Company_____

Name_____ Title_____

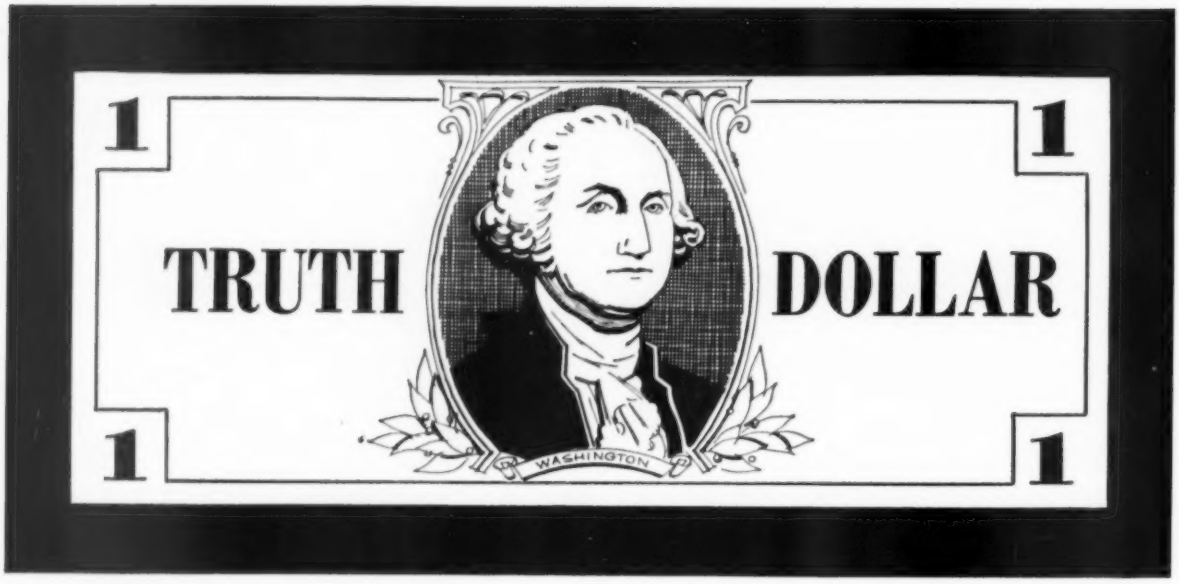
Street_____ City_____ State_____

In Canada write: The Yale & Towne Mfg. Co., St. Catharines, Ontario, Canada

Gas, Electric, Diesel Lift Trucks • *Worksavers* • Hand Trucks • Hand and Electric Hoists • Pul-Lifts

"let George do it"

Here's one time when, in all conscience, you can . . .



How $1 for Radio Free Europe can help stop World War III before it starts.

Take a look right now at one of those green pieces of folding money in your pocket. It features the portrait of the world's greatest symbol of Truth.

With that single dollar you can send 100 words of Truth through the Iron Curtain—Truth to 70,000,000 people who are being told lies about you!

They are the restless, freedom-loving captives of Communism who, when you get right down to it, can do more than anyone else to keep the Kremlin off balance and to stop World War III before it starts.

We are getting the Truth through to them, *via Radio Free Europe, from 21 powerful radio transmitters*—Truth to counteract Soviet lies—Truth about people in their own countries, to help them help themselves.

What will your dollar buy? It will send hope and courage where they are needed most. It will help build new transmitters, put more programs on the air. *A "Truth-Dollar" from you can help stop World War III before it starts!*

Is there anything more important you can do with that dollar right now? Send it to "Crusade for Freedom", c/o your local postmaster.

RADIO FREE EUROPE
supported by
CRUSADE FOR FREEDOM

FAST AND CLEAN DISCHARGE of even the lowest slump concretes is made possible by the patented blade design of this Worthington Hi-Up Truck Mixer, one of a fleet owned by the McNamee Ready Mixed Concrete Co. of Xenia, Ohio.

"Drivers, shop men, customers—everybody likes our new Worthington HI-UP Truck Mixers"

Says Charles F. McNamee of the McNamee Ready Mixed Concrete Co., Xenia, Ohio

McNAMEE DRIVERS LIKE THE HI-UP because its unrestricted hopper opening keeps charging time to a minimum. Both charging and mixing are accomplished with the drum rotating in the same direction. And the engineered weight distribution of the Hi-Ups lets you carry the maximum legal payload.

Mr. McNamee goes on to say:

"We particularly like our new Blue Brutes' heavy-duty transmission and their ease of operation. Our shop men like the provisions for easy maintenance; for example, they point out the relatively few lubrication points and their ready accessibility. The drivers say the machines are unusually easy to handle and to keep clean, that they mix and discharge exceptionally well. But what makes us happiest of all is that the machines and their product are liked by our customers."

We've been getting letters like this from Worthington Hi-Up Truck Mixer users all over the country. Why not find out for yourself about these modern Blue Brutes. Get the facts from your nearest Worthington distributor, or write directly to Worthington Corporation, Construction Equipment Division, Section R.3.6, Plainfield, N. J.

R.3.6

WORTHINGTON

IF IT'S A CONSTRUCTION JOB, IT'S A ***BLUE BRUTE*** *JOB!*

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Even a Boy can fight Communism with Truth

Kids on Radio Free Europe Send Hope To Pals Behind Iron Curtain

Twelve-year-old Karel Paces, a young Czech found in a German refugee camp, is broadcasting over Radio Free Europe to his Czech friends behind the Iron Curtain.

He is telling them familiar children's stories in their native tongue—stories now denied them by their Communist masters. These stories have a very real meaning to Karel's friends, a meaning ingrained in the folklore of their country.

Karel Paces is giving his friends, the boys and girls of his beloved Czechoslovakia, the truth of their own country and the free world. It is this truth which every American must support now so that it can be used to fight the deceit, darkness and despair which Communist tyranny is spreading through the satellite countries of Europe.

Day and night, Radio Free Europe is exposing Communist lies and propaganda, and sustaining the hope of oppressed millions that some day they will live in a better world.

At least $4,000,000 is needed this year to support and expand the operations of Radio Free Europe and Radio Free Asia. In addition, the Crusade for Freedom is seeking the signatures of Americans, on Freedom-Grams. These will be your personal pledges of hope for a free world.

This Crusade cannot succeed without your help. Your contribution is needed *now* to help support Radio Free Europe and Radio Free Asia . . . to help fight red lies with truth and to win the cold war.

Support this truth campaign now and help bring to millions the promise of future freedom.

Send your contribution to Crusade for Freedom, c/o your local Postmaster

Help Truth Fight Communism
Give To Crusade For Freedom

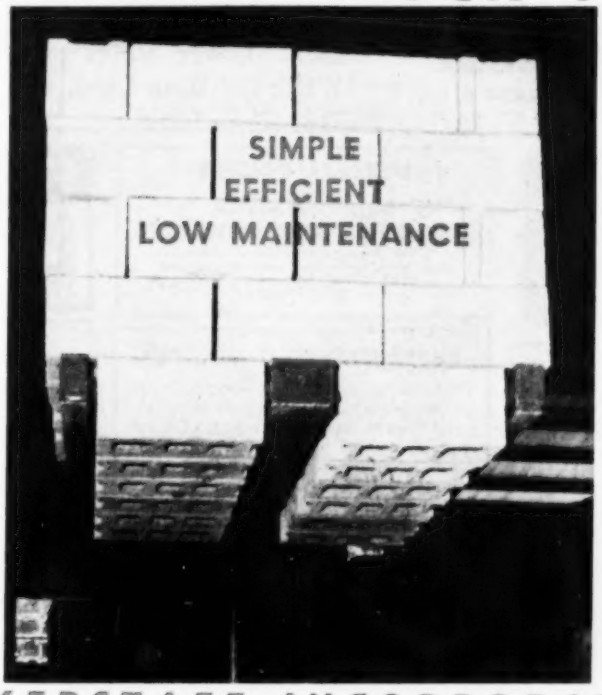
Contributed in the public interest by

Pit and Quarry Publications, Inc.

BICKERSTAFF BLOCK FORKS

AUTOMATIC OR HYDRAULIC

THE BEST FORK FOR MECHANICAL CUBING



ONE FORK HANDLES ALL SIZE BLOCK

ATTACHES TO ANY LIFT TRUCK

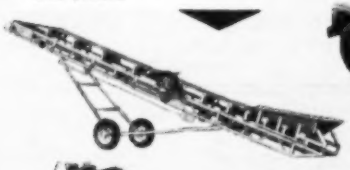
BICKERSTAFF INCORPORATED

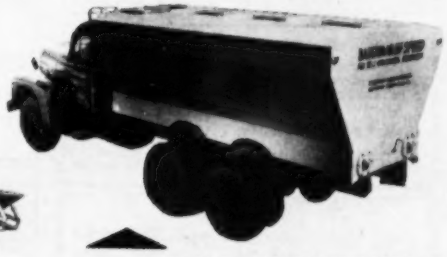
MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT

COLUMBUS, GEORGIA

BAUGHMAN *for Better Bulk Material Handling and Transport*

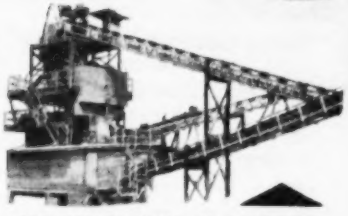
Model 230 Portable Conveyor. One of many Baughman Conveyors. Standardized or job-fitted. Lengths up to 46'. Gasoline or electric motor powered.





MODEL TST-10 BULK TRANSPORT BODY. For hauling cement. Has twin auger discharge for automatic self-unloading. Lengths up to 35'.

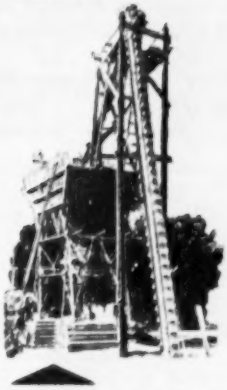
Model 195 Car Unloader [illegible] from full length of freight car [illegible] and flight conveyor gives fast discharge and can be integrated with other Baughman Equipment



MODEL 225 CONVEYOR COMBINATIONS. Drives, belts, and accessories designed to your individual needs. Simple to assemble, move, lengthen, or shorten.

Baughman manufactures a complete line of Bulk Transport Bodies and Bulk Material Handling Equipment. All are welded of high tensile alloy steel, lighter in weight for a greater payload, stronger and more rust resistant than ordinary steel.

Write for Complete information on any model.



MODEL 210 BELT AND BUCKET CONVEYOR. Sectional "Job-fitted" Belt and Bucket Conveyor with spaced or continuous buckets. Open or enclosed leg.

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.
129 Arch St. • Jerseyville, Ill.

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1—Used 3 Compartment Aggregate Bin—including Weight Batcher, single or dual, 120 Ton or Larger. (Complete Unit)

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Jackson Ready-Mix Concrete

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Besser Unitized Master Vibrapac machine in good condition, complete with Mixer and Skip Loader, having a capacity of approximately 1500-8 x 8 x 16 blocks per 8 hour day.

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12 in. mold boxes for No. 9 Joltcrete Block Machine. Approximately 4000 pallets in good condition. Extra cores, heads and patterns for casting cores & heads. Priced to sell.

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1 KemKrete Coater, for facing concrete blocks by the Sherwin Williams process.

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Interested in contacting companies who handle T or TT McCracken Concrete Pipe Machinery.

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MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
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SUPERINTENDENT WANTED

Full charge superintendent for large midwestern block manufacturer. Experienced competent man, able to handle over 50 man, high production, Besser block plant. Engineering background desirable. Salary open, based on knowledge and ability. Give complete details in first letter. All replies confidential. Principals only.

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Approved washed cinder aggregate

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Used Hydroelectric Hand Motorized Platform Truck 11" high 50" long platform. Suitable for concrete block operation. Write:

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can now make perfect thimble holes in chimney blocks at same rate of speed as ordinary chimney blocks with new attachment to their machine.

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STOP *that* WATER

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A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
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BIONETIC is a safe, sure, economical method.

Cleans sewage solids from tank
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Harmless to humans, and plumbing

BIONETIC at $4.25 per pound, or case of 12 one pound containers $48.00, 25 pound drum $3.25 pound.

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1—Quinn heavy duty 12" tile mold.
1—28 cu. ft. Stearns Mixer.
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1—Hand lift truck.

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North Pink St. Cherryville, N.C.

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1—1949 Model M3-142—$1250.00
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Both in excellent condition mechanically, and painted your color.

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HEATER, Industrial gas, oven or dryer, Premix #37, 500,000 BTU, 1000 CFM, complete with controls. Excellent condition—$350.00.

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Dayton, Ohio

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Good used equipment for DRY MIX CONCRETE PACKAGING PLANT. Consists of dryer, mixer, packers, supply of bags. Will furnish data on manufacturing cost, mixes, etc.

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PALLET RINGS

Write for full information

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LUFKIN, TEXAS

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1—Model 8—Columbia fully automatic, plain pallet, 2 block at a time, with automatic height control, producing 500 or more blocks per hour.
1—Air Off-bearer.
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2000—18x18x1¼" plain pallets.
Mold boxes to make all sizes and types of blocks.
This equipment is complete with motors and switches. It is guaranteed to be in excellent condition. Can be seen in operation. Reason for selling — installing larger machine. Contact:

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40,000 BTU capacity

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Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

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FOR SALE or RENTAL PURCHASE

1—1½ Marion diesel dragline model 362. Serial No. 7477, 65' boom & with 2 yd. clamshell.
1—34-E Koehring Dual Paver.
1—1500 BBL. cement bin with bucket elevator, undertrack unloader, & including Toledo Dial Scales.
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4—Dump trucks with double batch beds.
1—No. 10 Gas Caterpillar Motor Grader.
1500—Usable crossties.
1—24"x30' Barber-Greene gas portable belt conveyor.
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All machinery in good condition.
Available in 30 days or less.
For further information call or write:
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Telephone 24955

PLANT SUPERINTENDENT FOR CONCRETE BLOCK PLANT LOCATED AT MIAMI, FLORIDA

An opportunity for an experienced and well qualified man to take over the management of three block plants. Prefer a man with engineering background.

Excellent salary and bonus. Replies confidential. Give complete resume of past experience.

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WE WANT TO BUY

Model No. 300 Hi Lo Concrete Transport Mixer 1949 or later

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A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

And, the best way to sell it is through the Concrete Manufacturer, the Market Place for supplies and services.

Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways.

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Write or phone

MARBLE FACE BLOCKS
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1—No. 9 Joltcrete complete with motors, switches, dual shaft vibration, height control, and off-bearer.

Also 4", 8", & 12" attachments. 4", 8", & 12" pressed steel pallets. 2 turntables.

Complete outfit priced for immediate sale.

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Jaeger 2HS on 1947 GMC Tandem	$950.00
Jaeger 2HS on 1947 Dodge	$850.00
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BUILDERS RENTAL EQUIPMENT
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Something EXTRA *in the Stocking!*

for Vibrapac Owners using

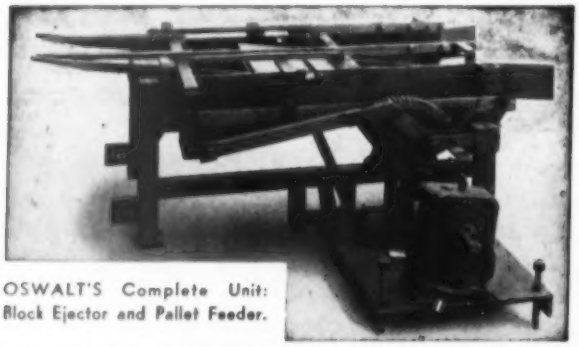
OSWALT SERVICE

Oswalt subscribers aren't surprised when they draw *additional* year 'round benefits from their block operations.

Oswalt Service is a *guaranty* of output up to 1080 uniform blocks per hour, without sacrifice of quality, or cracking of green blocks.

OSWALT Features

1. **Shock-free Block Ejector and Front End Pallet Feeder.**
2. **New Simplified Height and Density Control.**
3. **Improved Vibration and Machine Changes to speed-up.**



OSWALT'S Complete Unit: Block Ejector and Pallet Feeder.

Two U. S. Patents have been allowed on Oswalt improvements, one on the Synchronized Vibration, and the other on the Lug Link used in speed-up.

Many satisfied customers operating scores of machines.

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Phones: EStebrook 8-3666 · FOrest 6-3898

Make Money Manufacturing CEMENT DRAIN TILE

Today's tremendous demand for drain tile opens up a choice field for the wide-awake concrete products manufacturer. Either as a business by itself or as a profitable addition to the regular line.

The Champion machine makes all sizes of tile up to 12-inch diameter. With such a range you can supply not only the huge farm market, but many others where drain tile is urgently needed —reclamation projects, home building, road construction, subdivision activities, etc.

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Tile made on the Champion are outstanding in quality—dense, strong, uniform. Far better than clay tile, yet can sell for less—even after allowing a handsome profit on manufacturing operations. The Champion machine is simple, compact, easy to operate.

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CONCRETE EQUIPMENT CO.
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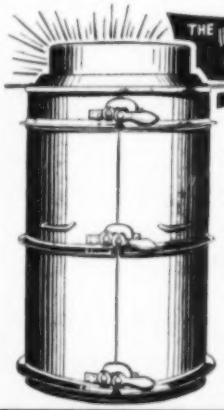
The Concrete Manufacturer

CLASSIFIED SECTION

Is the Market Place

for your USED EQUIPMENT



THE "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

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Speed Up Hand Work with the BIG BULLY AIR HAMMER

- Clean Equipment
- Shape Dry Concrete
- Star Drill

Clean Mixing Trucks Faster
Clean Fragile Mixing Equipment Safely
Speed Up Star Drilling

Weight only 50 oz., 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

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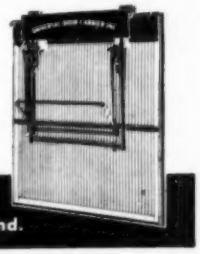
Above: Universal Doors and Carriers at Patterson Supply Co., Monongahela, Pa.

CAN *cut your costs per block—and improve your quality-uniformity*

Block plants the country over are reducing the cost of curing and stepping up quality-uniformity by installing modern, efficient, kiln closure equipment. They have found it *stops costly losses of heat and steam* and helps *achieve uniform curing conditions.* Why not investigate—

Universal

fully insulated, all-metal DOORS
and world-famous DOOR CARRIERS



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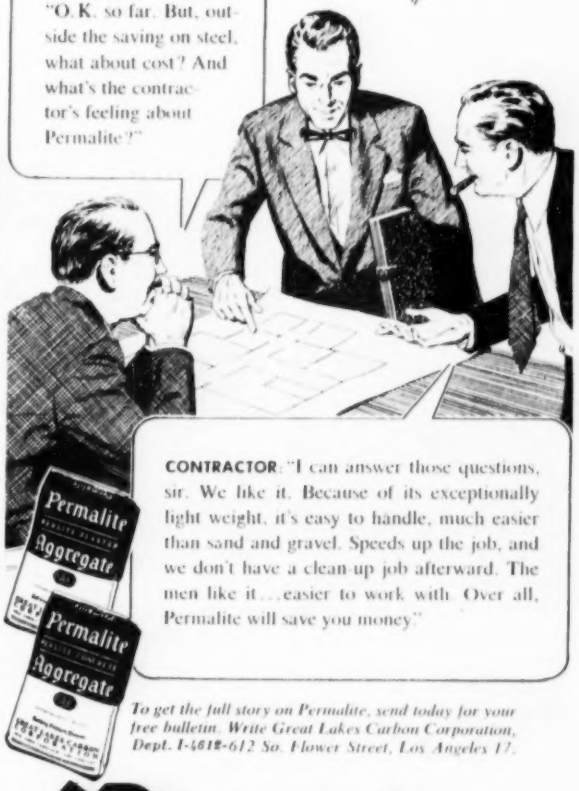
1117 Cornell Ave., Indianapolis 2, Ind.

There are lots of advantages in every sack of PERMALITE

ARCHITECT: "As I explained to you earlier, sir, we've been able to reduce the structural steel requirements on your building by figuring to use Permalite for both concrete and plaster. With Permalite as the aggregate, we'll have a concrete with only one-third to one-half the weight of regular concrete—and with ample strength. Our curtain walls can be lighter and thinner, with improved insulating values. And here, on the columns and ceilings, Permalite plaster will give us tremendous savings in both dead load and expense . . . and meet all code requirements by giving us up to 4-hour fire-ratings, too."

BUILDING OWNER: "O.K. so far. But, outside the saving on steel, what about cost? And what's the contractor's feeling about Permalite?"



CONTRACTOR: "I can answer those questions, sir. We like it. Because of its exceptionally light weight, it's easy to handle, much easier than sand and gravel. Speeds up the job, and we don't have a clean-up job afterward. The men like it . . . easier to work with. Over all, Permalite will save you money."

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Corrosion-
Resistant
Hi-Strength
Alloy Steel

For Fork or Platform Lift Trucks

CHASE — THE LAST WORD IN
- *DURABILITY*
- *ECONOMY*
- *EFFICIENCY*

Sturdy construction
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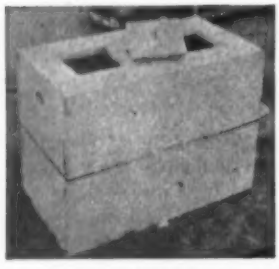
any style or capacity
•
Shipped knocked down
•
Rigid Field connections
•
assembled Easily

CHASE Foundry & Mfg. Co.
2400 Parsons Ave., Columbus 7, Ohio

There's a GOOD MARKET near You
for this Top Quality
SEPTIC TANK made with



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EQUIPMENT

Alert concrete producers specify CARPENTER Equipment to supply the wide demand for septic tanks. CARPENTER Tank Forms assure faster output . . . lower costs . . . a premium product. Our Delivery Rig requires only one man. Satisfied customers from coast to coast. *Write for details.*

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JOHNSON ELEVATOR CHAINS
- long-life carburized steel knuckles
- medium-high carbon steel side bars
- alloy heat-treated ⅝" pins
- welded bucket lugs

***All-welded* BUCKETS**
- light, durable, smooth
- fill fast, clean fast
- heavy gauge lips, ends
- cement: 10x6, 12x7, 14x8"
- agg.: 10x6, 12x8, 14x8, 16x8"

To: C. S. JOHNSON CO. Champaign, Illinois
Send information on: ☐ buckets ☐ elevator chains
NAME _____
STREET _____
CITY, STATE _____ J342PG

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*See also Detailed Information in 1953 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

Curing Concrete Blocks?

For the speedy charging and discharging of pressure curing chambers nothing can beat

BLAW-KNOX QUICK-OPENING DOORS

They reduce "door time" from minutes to seconds! No lugs, bolts, levers or sliding bars. Self-sealing gasket positively operated by internal pressure. Smooth-functioning ball bearing davit-type hinges. Manual or hydraulic operation. Adaptable to either vertical or horizontal vessels. Furnished in sizes up to 10 ft. diameter. For details on this and other Blaw-Knox equipment of interest to concrete product manufacturers, write for Bulletin No. 2439.

BLAW-KNOX

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
Process Equipment Department
Pittsburgh 22, Pa.

Get

GOOD RESULTS

Fast

Advertise your idle equipment

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NOW MORE THAN 140 LICENSED MANUFACTURERS *Producing*

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homeward
***Concrete* STEPS**

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

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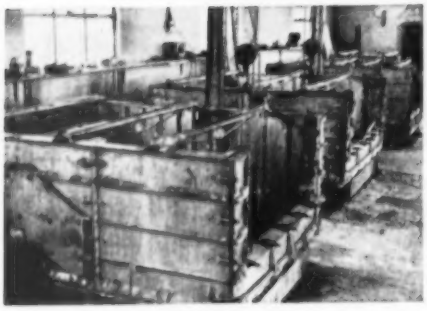
Plant, office and display yard of Concrete Step Co., Elkhart, Indiana.



Note costly forms used in casting step units.

Under side view of step unit, showing wall thickness and sharp edges.

Fewer forms · Smaller inventories

with

LEHIGH EARLY STRENGTH CEMENT

In precasting many concrete products, such as these steps, the wide range of sizes and styles presents many problems to the manufacturer. Here are just a few – high cost of forms, heavy inventory and adequate space to store it.

With Lehigh Early Strength Cement, a manufacturer gets off to a good start in solving these problems. Its use results in greater production with fewer forms. Curing time is much reduced—heavy inventories are not needed. Special sizes can be supplied on shorter notice. These are savings all along the line.

Whether you make special or standard units, Lehigh Early Strength Cement can help you save time and cut costs. Our Service Department is ready to help you solve your production problems.

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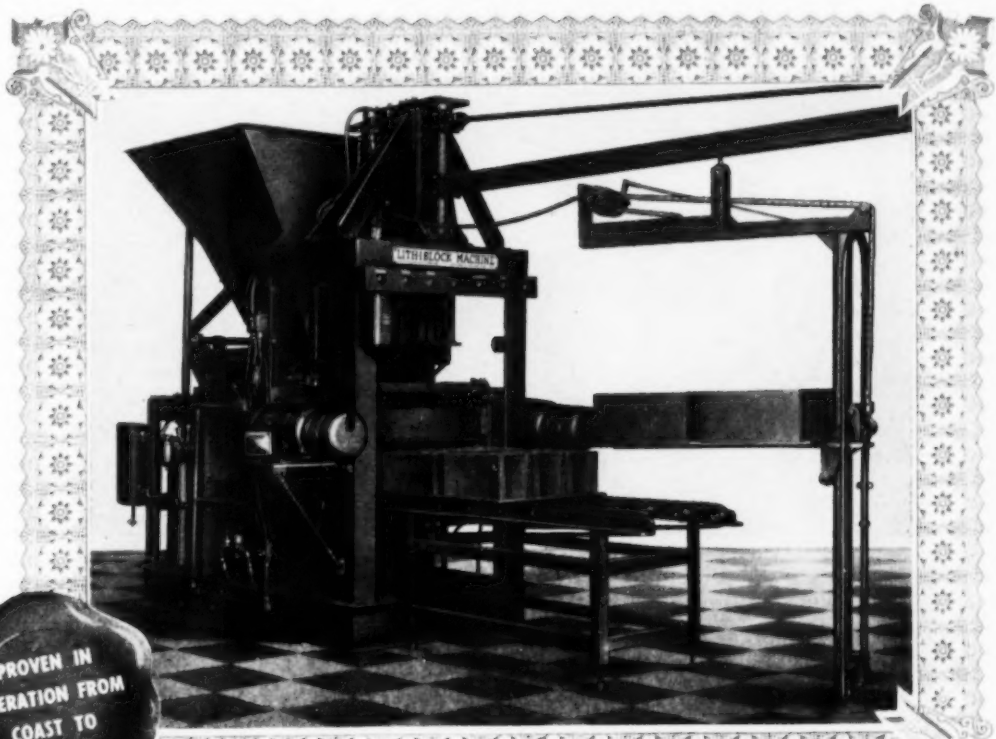

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We'll be here tomorrow to back up what we sell today.

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Imagine changing mold boxes in *minutes!* With the exclusive new Lith-I-Block Quick-Change Mold Box, you simply slide one mold box out, slip the new one in and change strippers! Then you're rolling again. There's no lost time, no wasted labor. The vibrators and all other equipment stays put . . . you add hours and hours of profitable running time every month.

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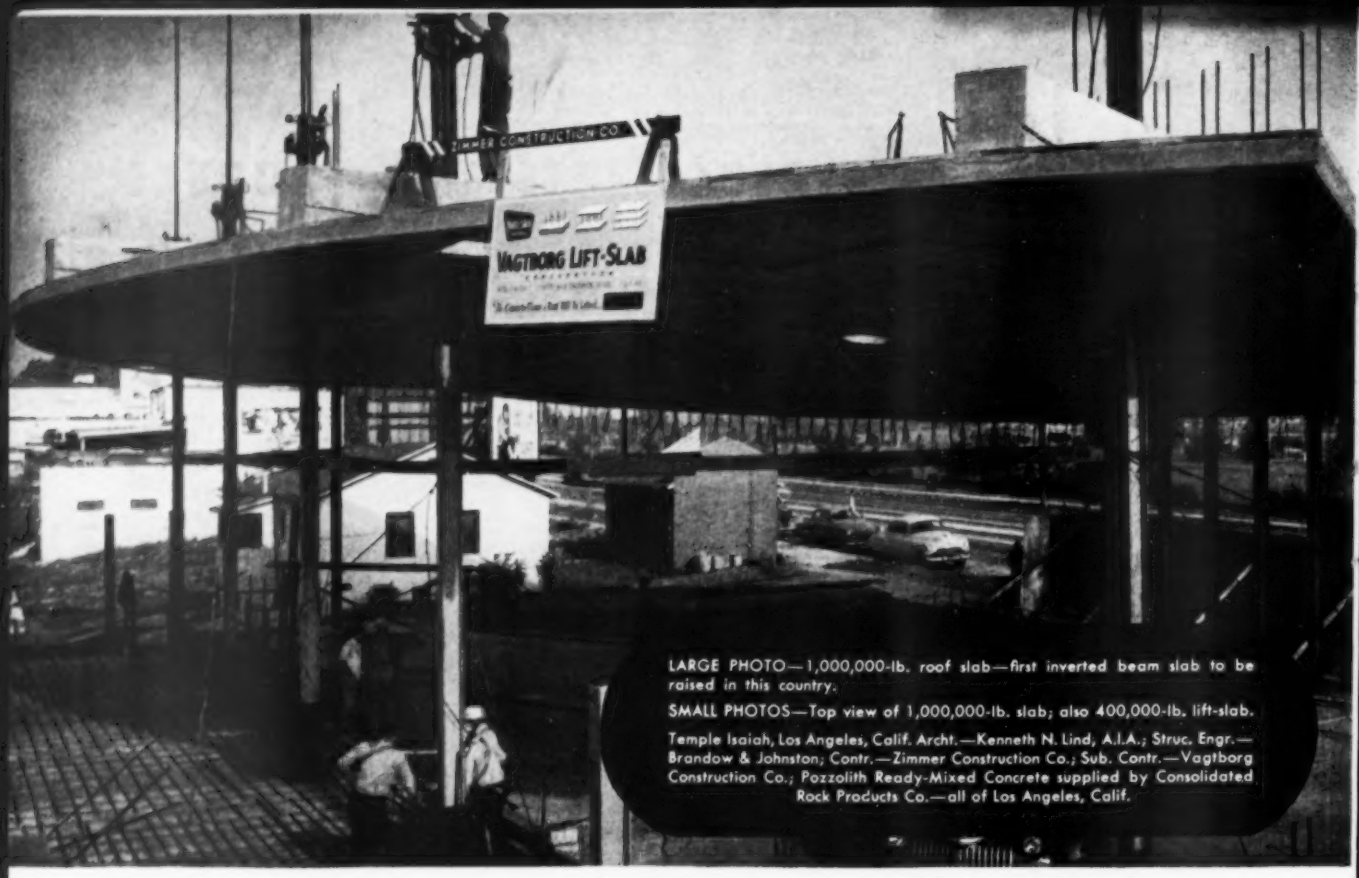
This and many other Lith-I-Block features are designed to give you top volume, save you money and conserve labor . . . all with a lower capital investment. That's why the new Lith-I-Block Machine is preferred by leading block producers from coast to coast. That's why it is the most profitable for you.

LITH-I-BLOCK MACHINES ARE MANUFACTURED BY THE LITH-I-BAR COMPANY HOLLAND MICHIGAN



LARGE PHOTO—1,000,000-lb. roof slab—first inverted beam slab to be raised in this country.

SMALL PHOTOS—Top view of 1,000,000-lb. slab; also 400,000-lb. lift-slab.

Temple Isaiah, Los Angeles, Calif. Archt.—Kenneth N. Lind, A.I.A.; Struc. Engr.—Brandow & Johnston; Contr.—Zimmer Construction Co.; Sub. Contr.—Vagtborg Construction Co.; Pozzolith Ready-Mixed Concrete supplied by Consolidated Rock Products Co.—all of Los Angeles, Calif.

First Inverted Beam Lift-Slabs Are POZZOLITH CONCRETE

IN a letter about this job, Zimmer Construction Co., the contractor, said—"With the use of Pozzolith in our concrete we were able to . . . pour both slab and beams together with 3½" slump, yet were able to maintain the necessary workability so necessary in this type of pour without excessive vibrating.

"Further, with the use of Pozzolith we obtained a seven day test of 3,200 pounds and a twenty-eight day test of 4,600 pounds, allowing us to raise these slabs in seven days instead of the usual fourteen day delay."

Better, more economical concrete is obtained with Pozzolith because it *reduces the unit water content* of a mix approximately 15%. As stated by the American Concrete Institute (ACI 613-44, Page 655)—"For a given set of materials and water-cement ratio, the unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete." Obviously, for a given water-cement ratio, the mix requiring the lowest water content will also produce the most economical concrete.

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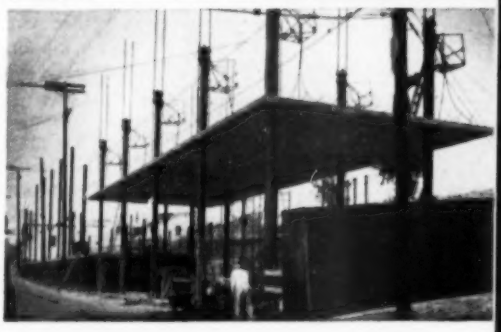

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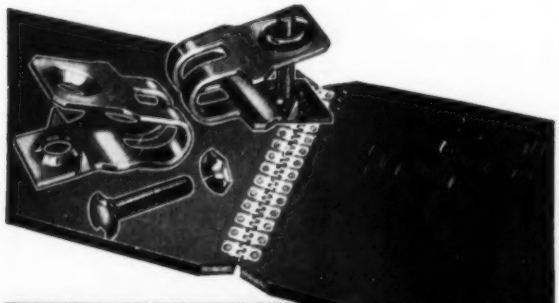

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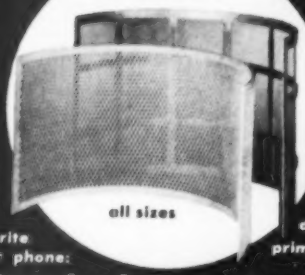

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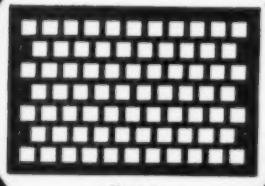

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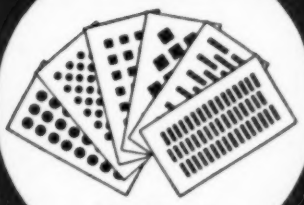

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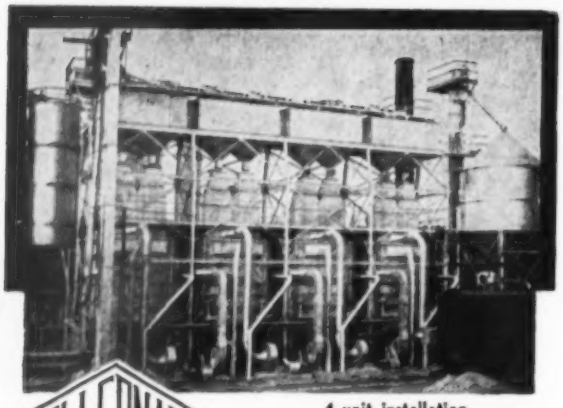

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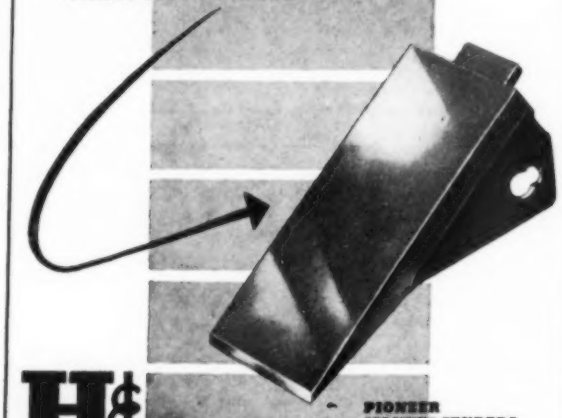

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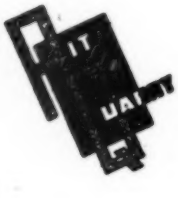

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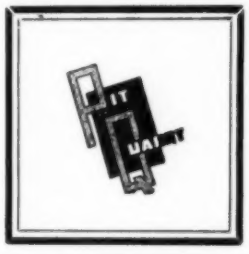

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SINGLE SHELL: 4x20, 4'x40', 5½'x40' & 7'x60'.
KILNS: 6'x60', 6'x80', 7'x60' & 8'x125'.

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LOOMIS 41, KEYSTONE 51 & 71.
10—IR—FM2—WAGON DRILLS.
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42x48 TRAYLOR JAW.
24x36 FARREL 15B.
24x36 BUCHANAN SECTIONAL JAW.
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PIONEER 300 WA CRUSHER-WASHER SCREEN-6x20.

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BLAKE TYPE—48x60, 30x36, 24x36, 18x36, 13x30, 12x24, 12x16.
SINGLE SHAFT—18x36, 15x36, 15x30, 10x40, 10x30, 10x20.
CAM & ROLLER—24x40, 14x26, 11x26, 10x20, 6x20.

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NEWHOUSE 7", 10", 14"—KENNEDY 198, 258, 328—SUP. McC. 6"—AL. CHAL. 322R, 222R, 530R—TRAYLOR TY 36".

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6", 10", 14" & 20" SUP. McC.—GATES AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12.
PARTS FOR 42" SUPERIOR McCULLY.

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STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 135 FT. BOOM.

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Special bins to your specifications.
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45" Ohio lifting magnet, rebuilt.

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500 cu. ft. Gardner-Denver diesel, rebuilt.
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1—26,000# Vulcan, Sgl Drum AC with MG Set Complete
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1— 4,000# Brownie Carspotter AC
1— 5,000# Link-Belt Carspotter AC
1—20,000# Amer. Hoist Carspotter AC
1—20,000# LB Endless Puller

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1—36x36 Jeffrey Sgl Roll
1—12x16 Eagle Dbl Roll
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1—420'x20" SA Comb. Scraper & Bucket Conveyor or w/o MT'r. Ideal for tipple or deck.
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7½ h.p. motor, extra screen frames & bearings.
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V-belt and 30 h.p. motor.

All items in excellent condition

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2—8' x 125' Vulcan, ⅝" shell.
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1—7' x 60' Vulcan, ⅝" shell.
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1—5' x 40' Cummer, ⅜" shell.
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2—3'10" x 16' Link Belt, Roto-Louvre.
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2—#40, #50 Raymond IMP Mills.
2—#412, #512 Raymond Bowl Mills.
2—Raymond #1 Pulverizers with 6' double whizzer separators.
2—Williams 4 & 5 Roll High Side Mills.
4—Hardinge 4½'x16", 5'x22", 6'x22", 6'x48", 10'x48".
3—Patterson 6'x8' Ball Mills.
2—Abbe 5'x8'6", 5'x22', silex-lined Tube Mills.

CRUSHERS

1—Simmons 4' Cone Crusher.
1—Traylor 56" x 24" Crushing Rolls.
1—Allis Chalmers 36" x 48" Jaw Crushers.
10—Jaw Crushers 5"x6" to 24"x36".
1—McCully 10" Gyratory.

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6—Tyler Hammer Screens 3'x5', 4'x5', 4'x7', 4'x10', 5'x10', 4'x15'.
1—Seco 4'x10' double deck Screen.
5—Rotex 40"x84", 40"x120".
3—Air Separators 6', 8', 10', 14'.

MISCELLANEOUS

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2—Oliver Rotary Dewaterers 8'x4'.
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1—Vulcan 4½'x50' Rotary Dryer.
1—Allis Chalmers 48"x36" Jaw Crusher.
1—Allis Chalmers Superior McCully 10" Crusher.
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1—Troughing Idler Conveyor 18"x65' with motor drive.
1—Link Belt Drag Elevator 49'8" centers, 5 HP motor.
4—Bucket Elevators 20' to 31' centers with 6"x4" to 8"x6" buckets.
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Allis Chal. 26" x 12" x 6' vibrating.
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36" x 34' Apron.

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8' x 125' x ¾" (2).
7' x 160' x ⅝" (2).
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7' x 60' x ½".
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18" x 65' centers, complete.
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Size B, Abbe.
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200	A. C.	ARWWT	600
200	Westgh.	CS	600
150	G. E.	KT558	900
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Size	Make	Type	PSI	Displs
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11 x 12	Worth	HB	100	426
12 x 13	Worth.	HB	125	460
20 x 12 by 14	Sullivan	WN4	100	2032

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400	G.E. (H)	1	2300	230/440

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6'x40' Rotary Driers—Several
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Lorain ⅝ yd. shovel
Byers ½ yd. shovel
Lorain 40 dragline
Bay City ⅝ yd. dragline
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3-roll Troughing Idlers for these sizes:

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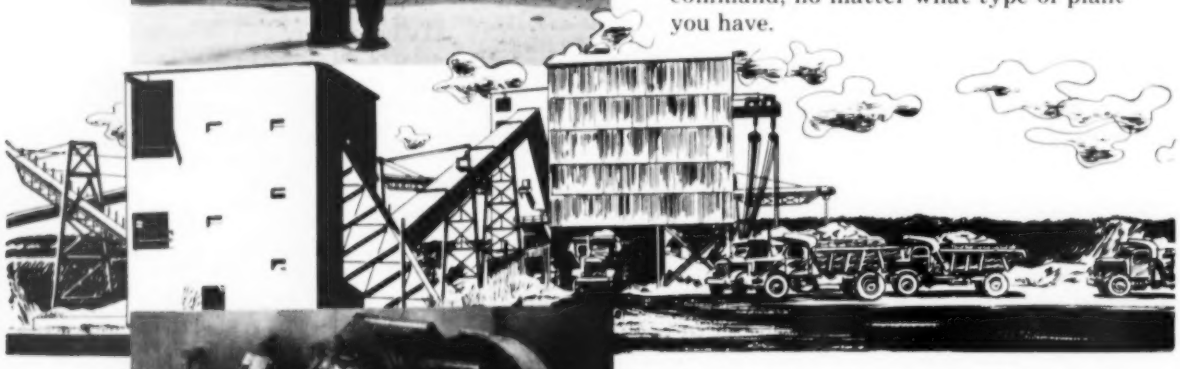

Top photo: Jeffrey's super-capacity Bucket Elevator and allied belt conveyors between crusher houses.

Center Drawing: Overall view of both crusher houses and integrated conveyor systems at plant.

Bottom photo: Head end of super-capacity bucket elevator showing rugged Jeffrey construction.

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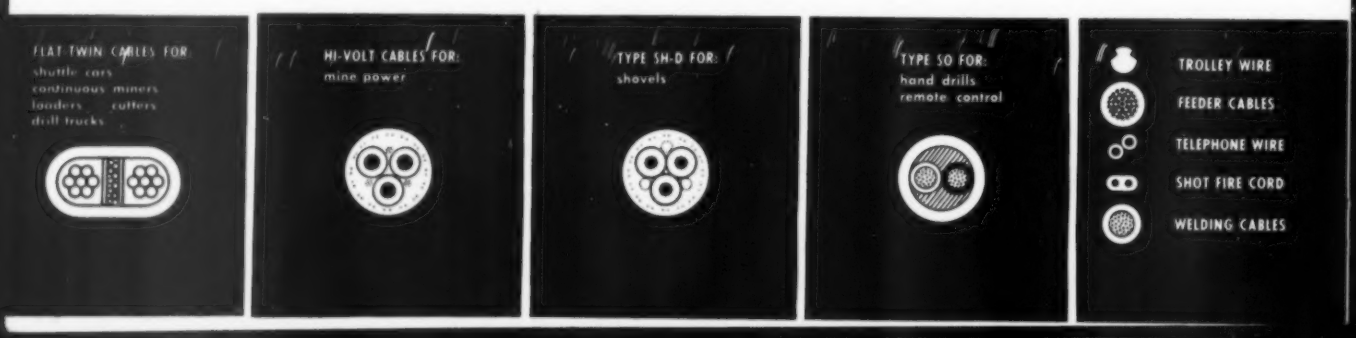

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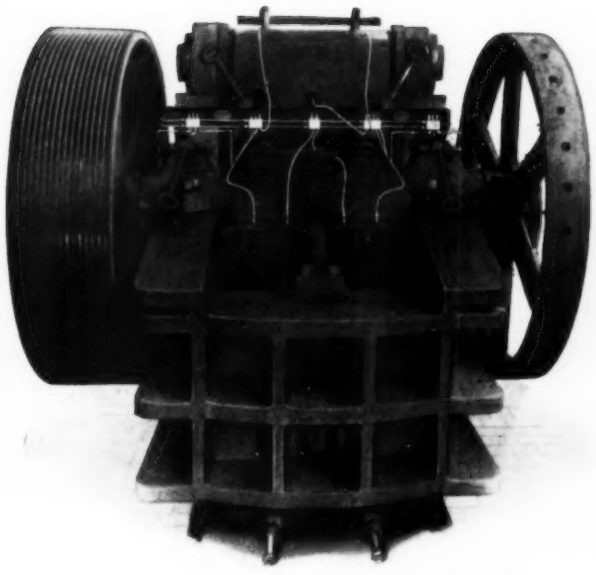

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Photo of Farvalized jaw crusher by courtesy of Traylor Engineering Company.

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